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and Western Industry
February 15, 1923
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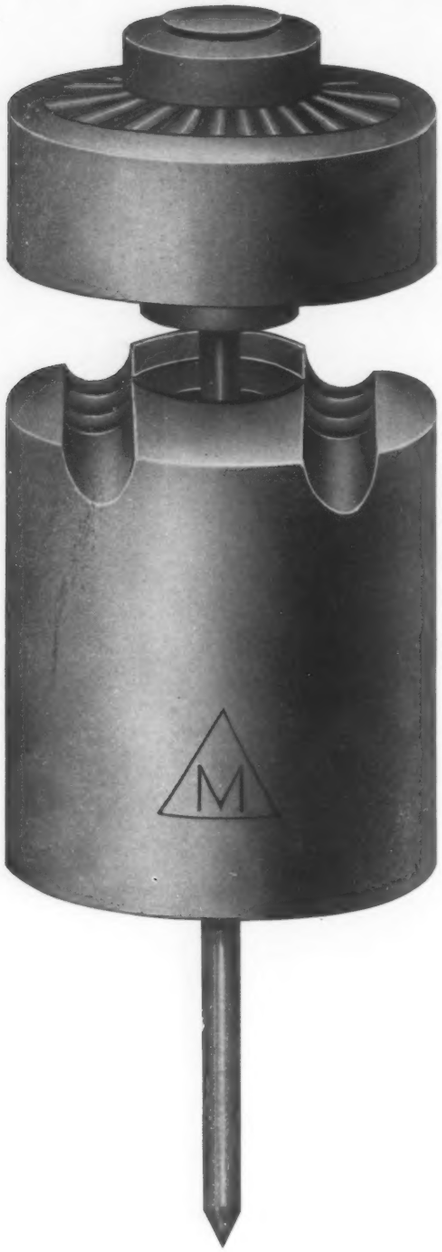

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C. T. HUTCHINSON, Acting Editor

NORMAN S. GALLISON, GEORGE C. TENNEY, Associate Editors

ROBERT SIBLEY, Consulting Editor
CLOTILDE GRUNSKY, Contributing Editor

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Keep a record today of the time and thought you give to the kitchen. Show it to your husband, and then—but that would be telling.

m-m-m what cooking!

are only a few of the "teasers" that start a campaign with which you can move a large quantity of Crawford Electric Ranges out of your showrooms onto your domestic meters; they are not half as interesting here as they are when you see them in their place in "The Crawford Plan."

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The best way to cut down *your* cost of living is to use *all* of the food you buy

-m-m-m What Cooking!

10

women in this city are going to win a prize next week. And a whole lot of families are going to eat better than they ever thought they could.

m-m-m what cooking!

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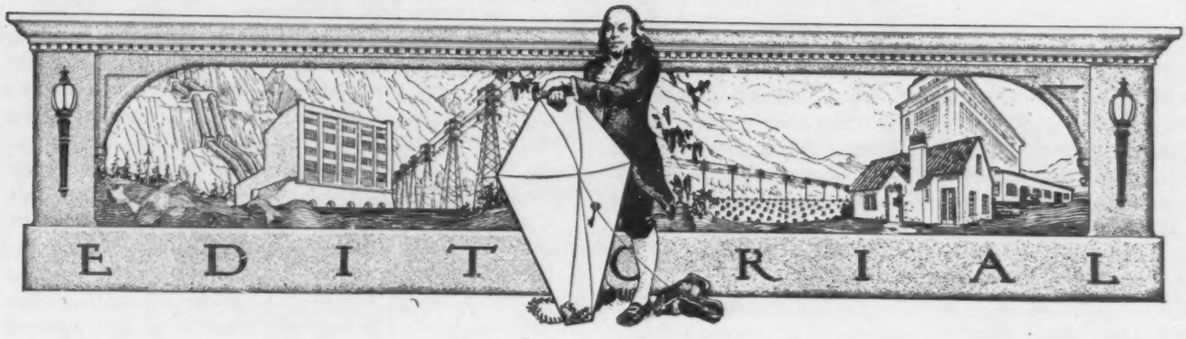
He was late to supper, but the food wasn't burnt or cold or anything. Why, this must be Heaven!

— *m-m-m!*
What cooking!



Pleasing the Public

PUBLIC relations presents a real problem, in fact public relations is in itself so new an idea, that to many it is little more than an expression of a nebulous something or other without which no business or industrial enterprise is complete.

PUBLIC service corporations, banks, industrial organizations, prompt to recognize the advent of a new fashion, have, in the past, set apart a nice office, attached thereto a handsome label, "Department of Public Relations," installed therein a bright young man, and perhaps a stenographer, heaved a sigh of relief, "Thank Heaven, that is done," and gone on about their business.

FEW of them really appreciate the possibilities for creating good-will inferred by that simple combination of two words. Fewer still realize that the practical application of the principles of public relations will prove to be the most potent weapon with which to combat the socialization of our industrial life.

THE success or failure of the public relations idea depends not upon the high officials, nor upon the high-sounding, platitudinous remarks of the after dinner speaker. It is of little or no consequence how many bulletins, orders or regulations are disseminated among utility employees. It is not an idea to be exploited through lofty sentiments from above directed toward the workers in the ranks. It is actually a selling job, requiring a sales force of the highest type, who will convey by word of mouth and force of example to every man and woman who are contact points between the company which serves, and the consumer who is served, that "The Public Be Pleased" idea is something more than a mere motto on the wall.

IT ISN'T so much what the organization and operation of such a sales force would cost. It is rather what the absence of such a department would cost. While the threat of public ownership will probably be with us always, it is at least a reasonable assumption that if the money spent to defeat the California Water and Power Act had been applied a few years ago to the building up of a structure of good-will between power producer and consumer, not a corporal's guard would have been found to espouse the cause of State ownership.

WITNESS the success of the Standard Oil Company, in very truth, the House of Courtesy. A volume might be written of the many simple, spontaneous acts of politeness on the part of employees to the general public. It is a spirit that pervades the entire organization, from the president down to the lowliest office boy, driller in the field, or white-clad operative in the service station. How is it done? Find out, those of you who aspire for the achievement of practical idealism in public relations, and then apply it to your own business. It pays.

Uniform Classification of Accounts for Electric Public Utilities

"WE ARE surprised to note," says a contemporary, "that the California Railroad Commission has adopted the classification of accounts of the Federal Power Commission instead of that just promulgated by the National Association of Railway and Utilities Commissioners. Knowing the progressiveness of the California Railroad Commission, we cannot feel that it will long retain an obsolete accounting system in place of one that is demonstrably sound and workable."

This is a criticism of the California Railroad Commission for doing the one thing which it was logical and reasonable to do, namely, adopting a classification of accounts similar to the classification adopted by the Federal Power Commission.

This act on the part of the California Commission simplifies the accounting procedure of all California companies thereby reducing unnecessary duplicating of records and attendant costs. Obviously, if the California Commission had adopted the accounting classification of the National Association of Railway and Utility Commissioners, all California companies handling projects under Federal Power Commission permits would be under the necessity of keeping two classifications of accounts. They would have to keep the Federal Power Commission classification and would also have to keep the classification adopted by the California Commission, whereas now they will only have to keep their accounts under one classification.

The statement that the classification adopted by the Federal Power Commission and the California Commission is an obsolete accounting system indicates a lack of knowledge on the part of the author, as the classification adopted by the Federal Power Commission has been under consideration for about a year and a half and three separate drafts of the classification were prepared. During all of this time the representatives of the National Electric Light Association, representatives of individual power companies, of various railroad commissions throughout the United States and representatives of the Accounting Committee of the National Association of Railway Utilities Commissioners have all been consulted and have had the opportunity of presenting criticisms and suggestions. The final classification was adopted only after careful consideration of the suggestions made by all interested parties.

Furthermore, the California Commission has probably had, in the past 10 years, as much experience as any State Commission in the practical application and use of classifications of accounts for electric utilities' properties and particularly for those operating and constructing hydroelectric plants. Under the circumstances it is fair to assume that the California Commission had a very definite idea of what a classification of accounts should be in order that it would give them the information which it is necessary for such a regulating body to have in the performance of its various functions.

Our contemporary also states that the National Association's classification was revised during December to meet the desires of the western companies for a functional set-up of fixed-capital accounts. This may be true, but it is very obvious that such revisions made so recently were not made in time for them to have been given consideration by the California Commission before adopting its new classification. Perhaps if those responsible for the make-up of the National Commissioners' classification had, at an earlier stage of the discussion on accounting classifications, made the changes desired by the western companies, both the Federal Power Commission and the California Commission might have been willing to accept the National Commissioners' classification.

Educate the Home Builder to Demand Quality Installations

A RECENT bulletin to members of a western electrical cooperative association names quality, service, reputation and profit as the chief factors entering into the electrical contracting business, the first three for the protection of the customer; the last for the contractor. The bulletin notes with regret that discretion and sound business sense are being disregarded because of "alarming competitive conditions" injected by the curbstoner and asks, "Why should gross business be increased without a commensurate increase in net profit?"

No business (electrical contracting not specifically excepted) can operate successfully at a loss, or for any length of time without making a fair profit. Yet many contractors have to learn this by bitter experience. Inexperience, poor judgment, and plain ignorance seem to be the major causes for cutthroat competition, which despite drastic attempts to eliminate it, remains a painful thorn in the side of the legitimate contractor.

Aside from attempting to educate the erring contractor in the folly of his ways, more attention should be paid to educating the public to demand not only value received but future satisfaction in housewiring. In an electric installation, just as in the purchase of an automobile or a necktie, a man may get value received for a cheap article, but would be more satisfied had he bought something of better quality. It is generally agreed that the average householder who builds but one home in a lifetime is interested more in value than price. Initial experiments have proven that the public is responsive to such educational work. Both the electrical industry and the public will profit as this education progresses, just as the contracting evil will diminish.

Political Ownership Differs from Public Ownership

POLITICAL fashions change as well as other fashions. The political demagogue of today, to be in style, must favor "public" ownership, so-called. Every new political party thinks it must favor "public" ownership of all public utilities. This has

come to be the plank in their platforms upon which they depend largely in their appeals for membership, the necessary molasses to catch the flies.

The organizers of these parties never tell prospective members that public ownership of utilities would remove $60,000,000,000 of properties from the tax rolls. All of the plants and properties and all of the securities of railroads, street railways and interurbans, of power and light companies, gas, telephone and telegraph companies, and all other utilities would become exempt from taxation under public ownership.

Who, in that event, will pay the hundreds of millions in taxes now paid by the privately owned utilities of the country? The answer is easy. The few remaining already overburdened taxpayers will carry that additional load.

There is a great difference between political ownership, at expense of the taxpayers, and ownership as stockholders in utilities, which is real public ownership. Customer-stockholders are quick to realize this.

Reorganization of National Radio Chamber of Commerce Is Effected

INTERFERENCE and the broadcasting of trivial and valueless material have injured the radio business in all lines to no small extent. Various attempts at a co-ordination of interests have been made to wipe out the evils of broadcasting and other radio problems with only nominal success.

The commercial importance of radio is of such recent growth and its problems are such, that to be effective, an organization intended to bring about needed reforms must be national in scope. The National Radio Chamber of Commerce, which was formerly composed of manufacturers of radio apparatus, has been recently reorganized to include all organizations or individuals interested in broadcasting. It is to be hoped that this agency will be successful in bringing about the cooperation and improvement in broadcasting activities that is so urgently needed.

Making the Show Windows Ring the Cash Register

THE wide-awake electrical retailer realizes that his show window is the one place in his store that is valuable above all others. It has truly been said that a good window display is a silent salesman which arrests passing attention, arouses the desire and pulls customers into the store. Show windows can be made to pay the whole rent, and will do so if a little time and attention is devoted to them.

Too often the show windows of retail electrical stores are neglected. The proper wiring of windows for merchants in other lines is a profitable business and if for no other reason, the electrical merchant should demonstrate by his own example the attractiveness and effectiveness of adequate lighting.

In another section of this issue is an account of really remarkable results obtained in the period of a year from a carefully planned series of window displays. The Field Electrical Company of San Bernardino, California, attributes a monthly gain of twenty-seven per cent in its merchandising business directly to a window display campaign. To the pulling power of these windows is credited the changing of the ratio of the number of people passing the store, compared with the other side of the street, from thirty-two to one, to two and six-tenths to one, in the period of a year.

The direct object of this campaign was to attract customers to an unfavorable location from a retail standpoint. The type of windows displayed by this concern, particularly in lighting effects, would do credit to the highest type of metropolitan establishment. The average electrical merchant can, however, with study and practice, duplicate the results obtained. For after all, the best window display sells the most goods.

Colorado River Treaty Awaits Ratification by One State

LEGISLATURES of six of the seven states affected by the Colorado River Treaty have ratified this important piece of legislation, at the time of this writing. Colorado has so far taken no action, nor has Congress approved the treaty.

Action on the part of the legislature of Colorado has been delayed by the introduction of conflicting bills concerning the general problem of water rights, the apportionment of water and activities on specific projects, as well as the professed desire of members of the legislature to acquaint themselves more fully with the provisions of the treaty.

The interstate pact, which was published in full in the December 15 issue of the Journal of Electricity and Western Industry, must be ratified by all of the signatory states. The principal features of the document are the apportionment of 7,500,000 acre-feet of water annually to each of the upper and lower basins for beneficial consumptive use, and in addition the apportionment of 1,000,000 acre-feet annually to the lower basin with a further apportionment to be made at any time after October 1, 1963. Domestic and agricultural use was decided to be primary, power secondary, and navigation subservient to the other uses.

Congressional action is reported to be delayed by the introduction of the Johnson-Swing Bill which provides for the construction by the United States Reclamation Service of a dam at Boulder Canyon.

The development of the Colorado River for the protection of irrigationists in the lower basin is an urgent necessity. The time is approaching when the water powers of the Colorado will be needed to augment the existing supplies of electrical energy to keep pace with industrial and agricultural growth. No agreement involving affairs of such magnitude as does the Colorado River Treaty can hope to satisfy everyone. No one claims that the treaty is perfect, but it is the best expedient that has been offered after several years of turmoil. In the interests of all parties involved it should be ratified.

CURRENT COMMENT

Ten years' progress in hydroelectric development in Utah, Idaho and western Colorado is described in a comprehensive booklet which has just been issued by the Utah Power & Light Company in commemoration of its tenth anniversary. The story told by the booklet begins by describing the small, scattered and individually operated power plants that were serving a portion of the company's present territory when the present system was organized. From that point the tremendous progress that has been made in the decade is told in an interesting and instructive manner. Today the system is shown to be a great and unified organization of modern power plants and distribution systems that are serving 205 communities with adequate, dependable and economical electric service. In all, the company's customers today number approximately 85,000.

Ten Years' Hydro Progress in Utah

The Utah Power & Light Company, the booklet tells, has devoted the past ten years to the development of a single resource of the West—water power—and yet in this development it has made possible the development of every other resource of the territory it serves through bringing to commerce and industry the power they require.

The booklet has been prepared for distribution to stockholders, consumers and others and sets a high standard for works of this class. It is gratifying to note the progress which has been made by western utility companies in the dissemination of interesting information relative to their operations, to the people whom they serve and to those who own their securities.

Radio recently played an important part in the resumption of wire communication between cities in the Willamette Valley following a series of disastrous storms. Floods washed out the tracks of the Southern Pacific Company and the Oregon Electric Company as well as the telephone and telegraph lines of both companies and the local telephone company at Jefferson, eight miles north of Albany. Communication north to Salem and Portland was totally cut off.

Radio Reopens Communication After Storm

In order to use the private telephone line south of Albany, officials of the Oregon Electric Company opened the switch in the Albany office. Meanwhile line crews operating out of Salem repaired the line, but with all other means of communication out and the switch at Albany open there was no means of advising the Albany office that the repairs had been made.

The Salem officials called upon the Salem Electric Company, which operates broadcasting station KFCD, to broadcast the information that the line was open, with the hope that the message would be picked up in Albany. J. H. Ralston, of the Ralston Electric Supply Company of Albany, was listening in and picked up the message. He immediately advised the electric company officials to close the switch at Albany and call Salem. This was done and communication resumed. It was not until 24 hours later that other telephone and telegraph lines were repaired. Radio, in this instance, was of great service, for with bridges washed out and all lines of wire communication down, there was no other means of communication between the cities in question.

Washout on the lines of the Oregon Electric Company near Salem during recent floods

---

An extraordinary accident which cost the life of a lineman is described in a statement recently received from L. Berks, chief electrical engineer, Department of Public Works, Wellington, New Zealand. The accident, which occurred when a crew was repairing a blown fuse on a distribution line, is described by Mr. Berks as follows: "A 3,000-volt fuse had blown on an 11,000-volt pole transformer station at Te Aroha and the lineman and his mate went out to replace it. The transformer is supplied by means of a throw-over switch from either of two 11,000-volt circuits running across at the top of the pole station. The

Bird in Wires Results in Lineman's Death

throw-over switch has a central dead position with a break of 9 in. from either set of jaws. The lineman unlocked the quadrant and opened the air-break switch, according to the evidence, to a distance of only about 4 in. instead of the full 9-in. break and proceeded to climb from the platform to the 3,000-volt fuses, making contact with the dead 11,000-volt leads. His mate beneath the platform heard a discharge and the lineman fell dead onto the platform.

"On removal of the corpse the dead body of a sparrow was found beneath it quite warm and with the beak and legs burned off. When examined the connections below the throw-over switch were all dead and safe and the deceased had not gone up within several feet of the live leads. Evidently the sparrow was killed simultaneously with the man and the accident was apparently due to the sparrow having made connection across the half opened air break switch, the momentary arc through the sparrow's body being sufficient to cause the death of the lineman."

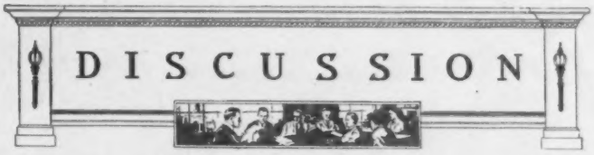
While the accident resulted on account of the failure on the part of the lineman to observe the regulations regarding the grounding of high tension lines before working on them, the circumstances were most extraordinary and illustrate how dangerous it is to take any liberties whatsoever with high voltages.

Asiatic Market For Machinery Is Expanding

The comparative importance of the Asiatic market for American made industrial machinery has expanded about three and a half times during the past decade, according to W. H. Rastall, chief of the industrial machinery division of the Department of Commerce, in an article in the current issue of Commerce Reports. The value of American machinery absorbed in Asia has risen from $3,800,000 in 1910 to $64,400,000 in 1921.

As contrasted with the markets of Europe, which are contracting, the markets of Asia are showing most satisfactory expansion, and it would appear that constructive sales effort would yield the best returns when applied to expanding markets. Most of the countries of Asia are very densely populated and show indications of being capable of marked industrial development, as contrasted with markets in many other parts of the world in territories that have been developed more recently, where there is a lack of adequate population, even when it is known that the natural resources justify exploitation. South America, Australia, and other sections have their immigration problems, but with Asia it is more a matter of raising the standard of living, and very rapid progress is being made in this direction.

It is a mistake to think of Asia as the "unchanging East." Railways are being developed, shipping increases rapidly from year to year, mines are being opened, industries are being established, highways are being constructed, automobiles and trucks are being placed in service, and in a great many other ways the entire continent is showing signs of absorbing an ever-increasing volume of mechanical equipment of great variety. In mapping out a sales program for the current year the foreign-sales manager should make ample allowance for these and many other factors.



Qualifications for Railroad Commissioners Explained by Fresno Engineer

To the Editor:

Sir: As the author of the article on the qualifications of railroad commissioners in the "Pacific Engineer" for November, 1922, with which you took issue in a recent editorial and with reference also to the letter of the Public Affairs Committee of the San Francisco Chapter of the American Association of Engineers and your answer in your issue of Jan. 1, may I not be permitted to voice my opinion?

I do not understand how you read into my article that any one was qualified merely because he was an engineer, for this is quite different from saying that no one but an engineer is qualified, and that even is more than I said.

But I wish especially to take issue with your phrase, that a prospective commissioner "should be able to judge." There are some who are good judges of horses and others who are good judges of paintings, but I can imagine no one who is able to judge and I find no meaning in the phrase until you tell me **what** it is he "should be able to judge." Chief Justice Taft would be eminently qualified where questions of American law are involved, but where a question of the merit of an ordinary surveyor's job is involved an ordinary transitman would be better qualified than the whole supreme court.

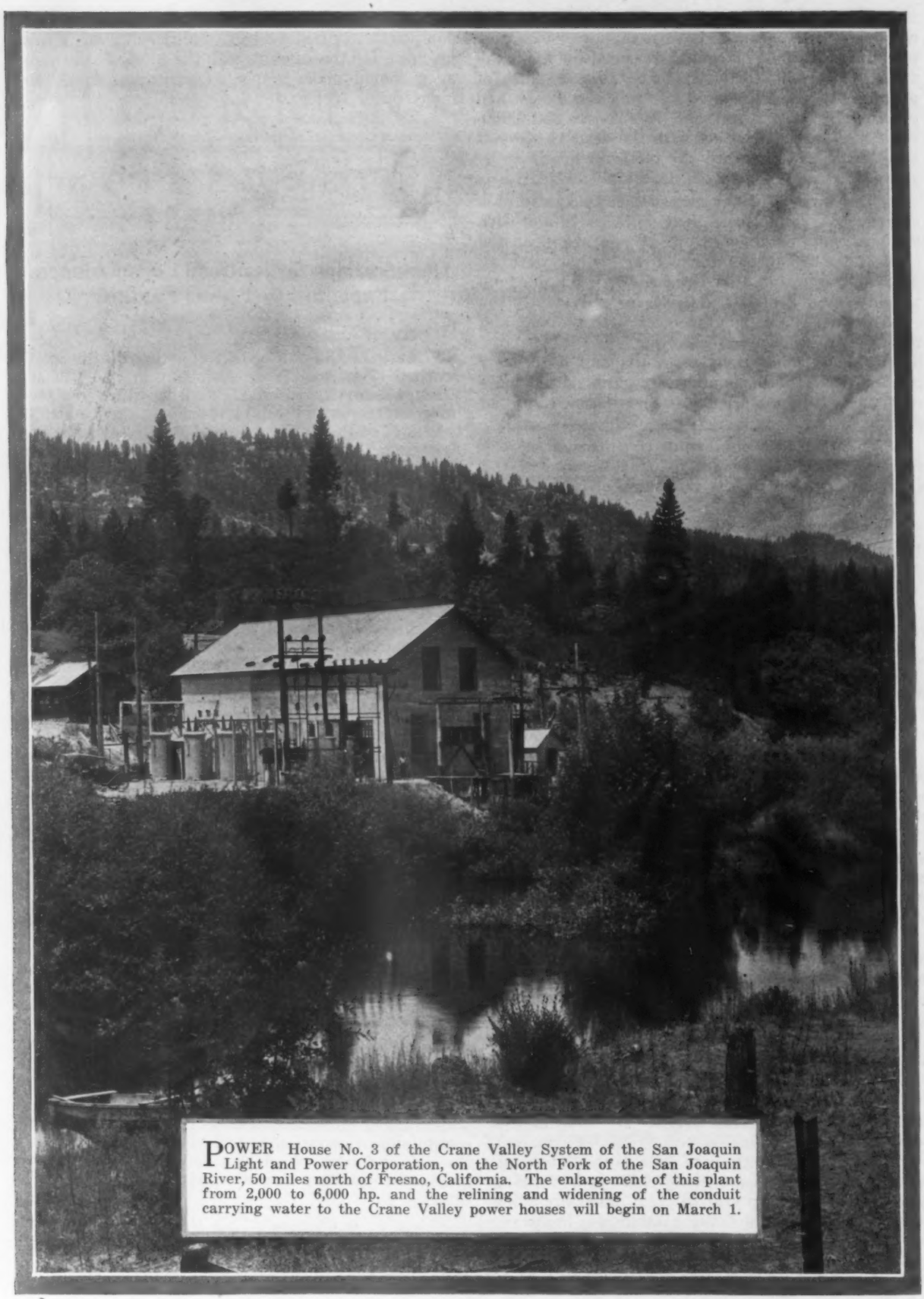
I agree with your other qualifications, but would add that the ideal commissioner must be aggressive. He is not a mere judge of questions brought before him, but he is to supervise and control, and to do that he must have initiative. Taft would certainly make a better judge than Roosevelt, but Roosevelt would have made the better commissioner.

I believe there should be two, or perhaps three competent engineers on the railroad commission, and one competent attorney and a business man with a fair knowledge of accounting; I believe such a composition of the commission would be able to inspire confidence in its honesty and in its ability to do justice.

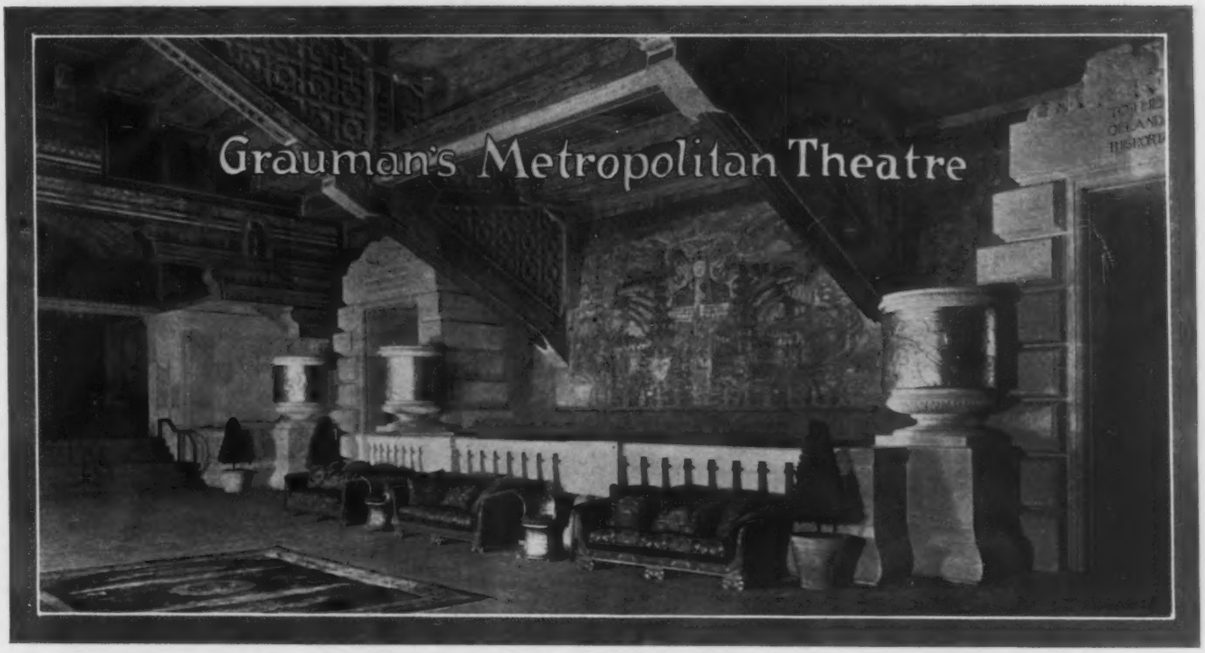
The two or three measures on the last ballot which aimed to extend the control of the railroad commission were defeated and I believe this reflects the lack of confidence which the people of California have or had in the commission as constituted at that time.

B. F. JAKOBSEN,
Hydraulic and Electrical Engineer.

Fresno, Calif.
Jan. 5, 1923.



POWER House No. 3 of the Crane Valley System of the San Joaquin Light and Power Corporation, on the North Fork of the San Joaquin River, 50 miles north of Fresno, California. The enlargement of this plant from 2,000 to 6,000 hp. and the relining and widening of the conduit carrying water to the Crane Valley power houses will begin on March 1.



By George C. Tenney

CONCEDED to be the most beautifully lighted theater in the world, this Los Angeles showhouse possesses a system of electric lighting and control unparalleled in the history of theater development. One-eighth of the $4,000,000 which it cost, was spent on the electrical equipment.

IF ONE had followed the practice in theater illumination, he would have a fairly comprehensive record of the development of lighting science itself. Theater managers, in their search for the unique and the novel to attract patronage to their houses, have depended upon lighting to such a degree that the playhouse has been an illumination laboratory where new principles have been evolved and new ideas perfected, later to be universally accepted as common practice. Thus the blazing pine knots in iron baskets of the fifteenth century were the forerunners of the intricate systems of color electric lighting of today. The candles which lighted George Washington to his seat in the famous John Street Theater and the flickering gas jets which illumined Lincoln's box at Ford's have been but stages in the development of lighting technique.

The history of the development of theater lighting is highly interesting. It took many years to develop this lighting through the successive periods of open-flame oil lamps, pine knots, candles, oil lamps with glass chimneys, gas lighting, lime lighting and finally electricity. It was not until gas lighting was invented that systems for controlling the lights could be obtained. Since that time, however, great strides have been made, and every generation has brought forth theaters that have eclipsed their predecessors in the brilliance and beauty of their lights.

Into this class falls Grauman's Metropolitan Theatre, recently opened to the public of Los Angeles. Conceded to be the most beautifully lighted theater in the world, this playhouse possesses a system of electric lighting and control that is unparalleled in the history of theater development. Add to this the additional electrical equipment of the ventilating system, the projecting room, the organ, and the stage and the total connected load of the theater reaches 900,000 watts, equal to that of many large industrial plants.

Grauman's Metropolitan Theatre was constructed at a cost of $4,000,000 for Sid Grauman, from plans prepared by William Lee Woollett. The consulting engineers were Holmes & Sanborn. This firm designed the lighting equipment, which was installed under their supervision by the Newbery Electric Corporation. The entire cost of the electrical equipment is in excess of $250,000.

The theater has its own substation in a separate room in the basement. Both alternating current at 2,200 volts and direct current energy is supplied by the Bureau of Power and Light of the City of Los Angeles. Standby alternating current service is furnished by the Los Angeles Gas & Electric Corporation. Automatic throw-over oil switches are so arranged that in case of a shut-down on the city lines the entire load can be picked up with a minimum loss of time by the electric company. Thus the systems of both must close down before the house becomes dead.

Lights for the foyer, lobby, signs, etc., are supplied through a small switchboard in the front of the house, fed directly by the city. An emergency switchboard can pick up the load should the necessity arise.

The main switchboard is located in the basement. From it energy is distributed to the motors driving the organ blowers, the ventilating fans and other auxiliaries and to the house and stage lighting circuits.

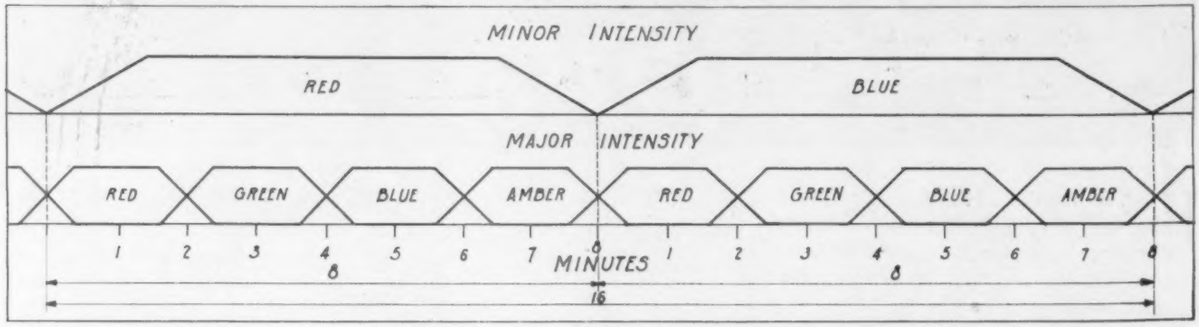
Feeders from the main switchboard are led directly to the contactor board, which, together with the dimmers, is in a specially ventilated room. From the contactor board they are carried to the dimmers and thence to a terminal rack. The house and stage lighting circuits, comprising approximately 490,000 ft. of wire, lead into this terminal rack, which for simplicity, is the counterpart of that in a telephone exchange. Each circuit is fused at the terminal rack.

To expedite the running down of trouble or breaks in a circuit, a system of numbering has been adopted which is followed throughout the house. Circuits are numbered at the terminal rack, with corresponding numbers at the dimmer terminals, the contactor terminals and the stage switchboard or pilot board. A master wiring key is hung over the stage switchboard for the convenience of the operator. This system of numbering together with the terminal rack, makes possible a regrouping of circuits at any time should that be desirable.

The basic principle upon which the lighting of the theater has been designed is that of complementary colors. In other words, where an object is lighted on one side with a maximum intensity of one color, the shadow formed behind that object, instead of being allowed to remain black, is lighted with a minimum intensity of a color which is complementary to the maximum. Massiveness is the theme of the architecture. The walls, ceilings, and columns are rough concrete, with the marks of the wooden forms unerased. Primary colors have been used for decoration with reckless abandon. For effectiveness the architect has depended upon illumination. Lights are used to give an impression of depth where structural limitations prevented actual depth.

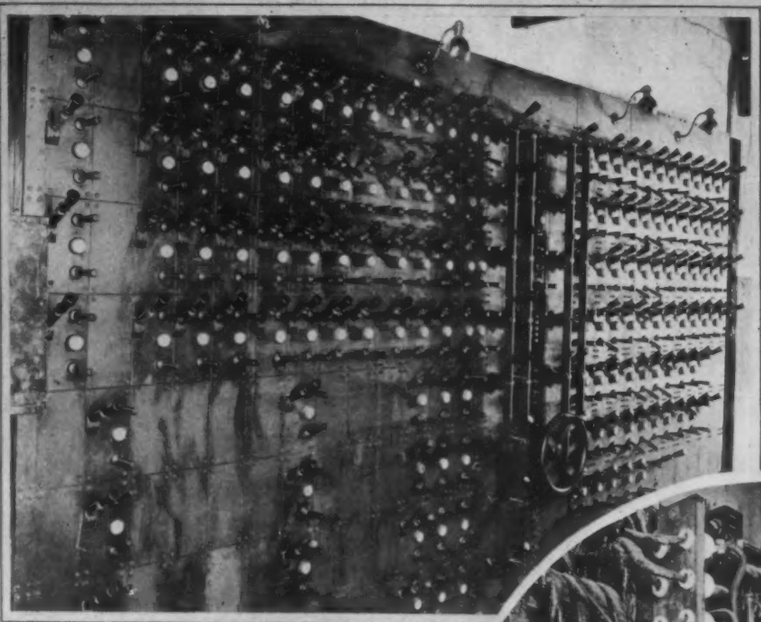
In the main auditorium, all light sources are hidden. There are no fixtures with the exception of those beneath the balcony where no other method of illumination was possible. A total of 780 baby spotlights with mirrored reflectors designed especially for the theater, and 10,400 lamps of every conceivable shape and wattage are used to light the auditorium. Every spot where a light source might be hidden holds its battery of spotlights or its trough of lamps. This principle lends a highly desirable tone of mystery to the lighting scheme.

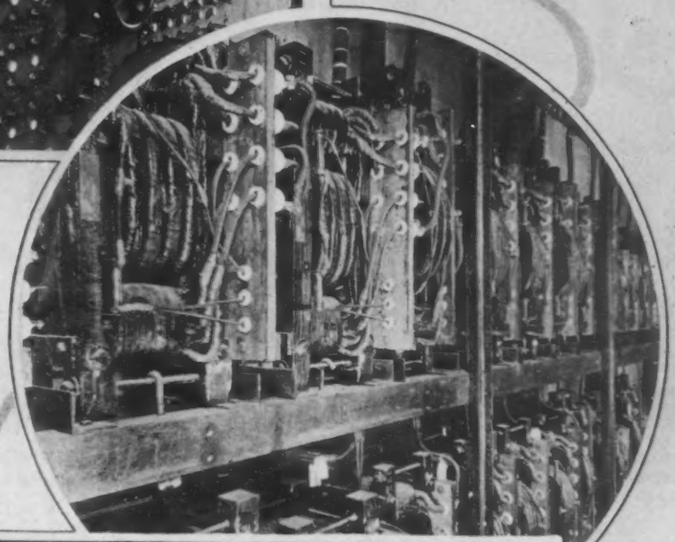
The lighting masterpiece of the playhouse is the central doily shown in one of the accompanying photographs. Above this are countless spotlights and lamps operated by a motor-driven rotating dimmer. Four colors, red, green, blue and amber, in the order named, focused in one direction, rise from zero intensity to a maximum and then fade. The shadows are lighted from the opposite direction with a minimum intensity of red and blue, each extending over one cycle of the maximum colors, as shown in the accompanying curve. A complete cycle requires sixteen minutes. Thus the color variations obtainable are almost limitless, including practically every gradation of the rainbow's hues. These lights are also used to obtain atmospheric lighting effects to accompany stage numbers or musical interpretations. With them the illusion of a storm, moonlight, a volcanic eruption, or a sunrise can be obtained with a simple setting of switches on the pilot board.



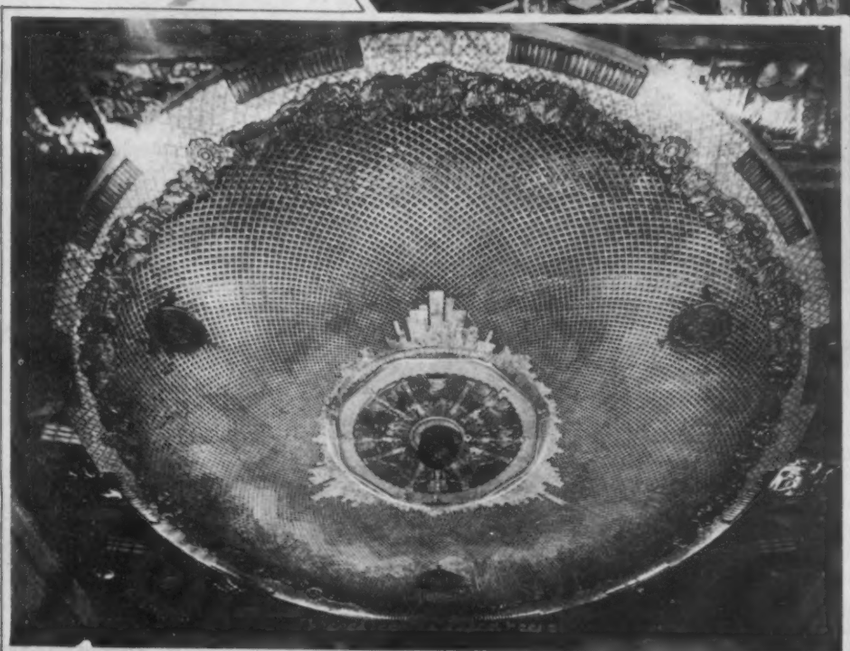
An idea of the many color effects obtainable with the rotating dimmer which operates the lights above the doily is shown in this chart which depicts the rise and fall of color intensities over one complete cycle of sixteen minutes.

The heart of the lighting system is the stage switchboard and dimmers. Grauman's Metropolitan Theatre has the most complete electrical equipment of any theater in the world. The switchboard and the dimmers control the largest number of circuits of any stage switchboard, with a total connected load on the board in excess of 750,000 watts. Due, however, to the new types of switches and the reactance type remotely controlled dimmers, which were especially developed for this theater, this switchboard is so compact that it can easily be operated by one man. The board is 13 ft. long and contains 355 switches. There are 139 individual dimmer controls and 165 individual circuit controls. With the reactance type remotely controlled dimmers there are no hot leads to the pilot board. Where a dimmer will control a circuit involving 20,000 watts and 60 amp., the lead to the switchboard will involve but .1 to .2 amp. Dimmers of this type are from 95 to 98 per cent efficient. With two contactor coils on the contactor board it is possible to have two lighting setups on the pilot board involving the same circuits, either one of which can be switched on or off at the will of the operator. This is what is known as the preset selective type. Thus it is possible for the





Controlling the largest load of any theater switchboard in the world, the pilot board in Grauman's Metropolitan is at the same time the most compact and most flexible. In the circle are some of the remotely controlled reactance type dimmers perfected by the Ward Leonard Company for this showhouse, while at the bottom is a view of the central doily, the lighting of which is a masterpiece of the art of illumination. Complementary colors form the basis of the lighting plan.



operator to switch on one set of lights and set up another involving many of the same circuits without disturbing the first. A set of score sheets are being worked out for various lighting effects, which, when completed, will enable the operator to prepare any effect desired with a minimum loss of time. Should the music or play call for a sunrise effect, he can run through these score sheets, pick out the one labeled "sunrise" and from it set the various switches from the numbers on the score. The switches and dimmers are so co-ordinated that the operator can play with the switches as a musician plays the notes on a score of music.

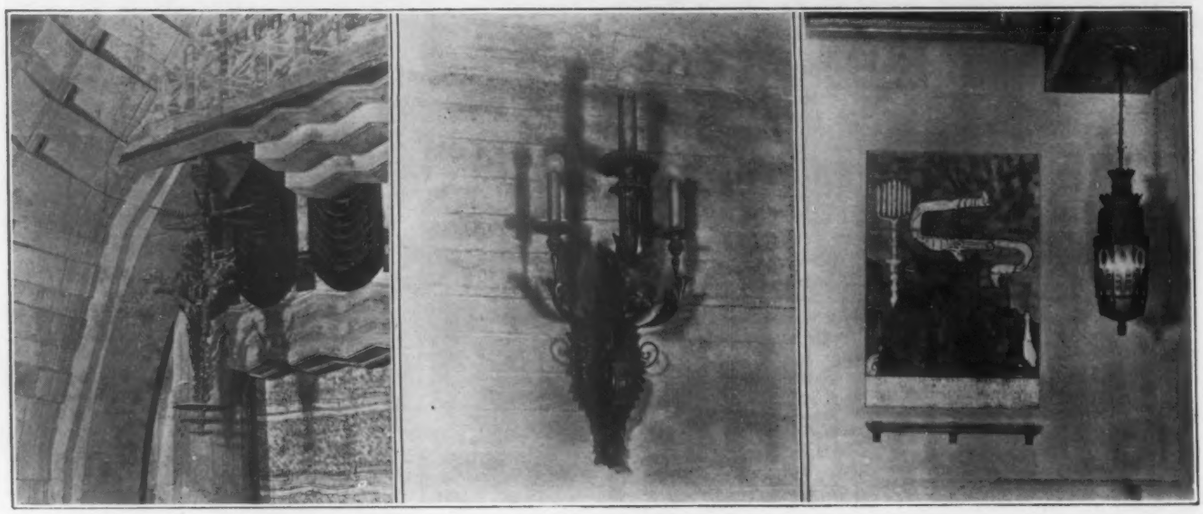
Pilot lights on the switchboard indicate when circuits are in service and should these lights fail to function, the operator knows immediately that there is a break in that particular circuit.

The stage switchboard, contactor board and dimmers were furnished by the Ward Leonard Electric Company, although the pilot board itself was constructed by the Hub Electric Company of Chicago. All were assembled before shipment and circuits numbered so that the installation was a simple matter. The assembled pieces were removed from the cars, set in place and bolted to the floor. The system of numbering enabled the contractor to connect the circuits with a minimum of trouble.

While the lighting system of the theater is the most noteworthy of any showhouse in the world, there are other features to the electrical equipment of an outstanding nature. Through a system of irreversible screws the orchestra platform can be raised a distance of thirteen feet and be made a part of the stage. Two 25-hp. motors drive these screws. The platform can be lowered at any one of three speeds and be controlled from the orchestra leader's platform or from the stage switchboard. Automatic self leveling machinery is used to bring the platform to the same level as the stage. In other theaters, notably the New York Hippodrome, this is done hydraulically, and allowance must be made for valve leakage and settling. This equipment, designed by Holmes and Sanborn, cost approximately $50,000. The organ console is raised and lowered in the same manner.

The theater contains two electric refrigerating plants in connection with its ventilating system. In hot summer weather, the air will be cooled before entering the house.

The system of house telephones is most complete. In addition there are two microphones on the stage with a loud speaker in the projection room for the transmission of cues.

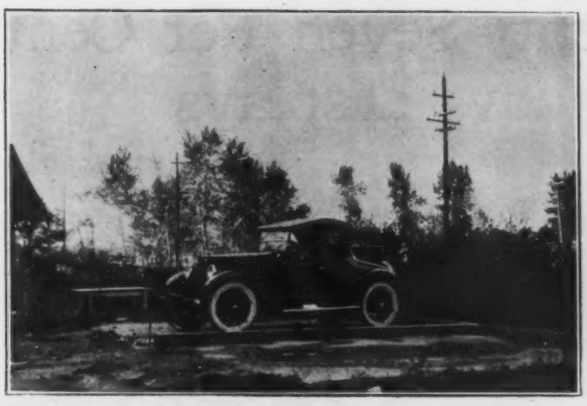


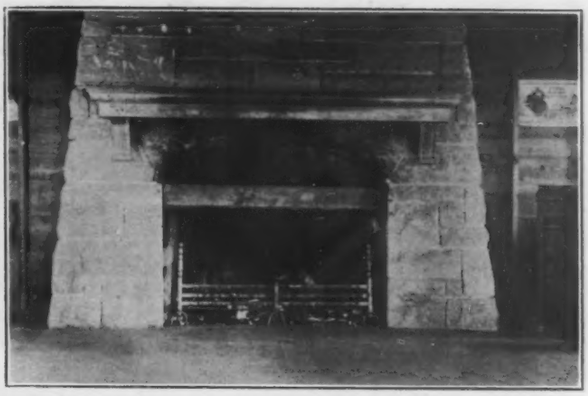
Three striking details in the lighting of the theater, the one on the left showing one of the weird ornaments which casts a grotesque shadow on the wall, the center, a special fixture attached to the rough concrete wall, and the one on the right, a hanging lamp in one of the mezzanine lobbies.

The organ blowers are driven by two alternating current motors. On the opposite end of the shafts are two direct current machines with automatic throw-over switches to take up the load in case the alternating current source fails.

In the projection room, the direct current leads to the machines are taken from a ledge on the front wall. Remote control switches on the projection room board operate a motor-generator set in the basement should the source of direct current to the projection machines fail. Wires lead from the machines to voltmeters on the organ console and the orchestra leader's stand. These are calibrated to read feet-per-second and record the speed of the film so that the music may be gaged accordingly.

It is evident, then, that in no other place does electricity find greater application than in the theater, not in the lighting alone but in almost every operation. And with the completion of Grauman's Metropolitan Theatre another progressive step has been taken in the development of theater lighting, and, lastly, in the development of lighting science itself.





An auto wash rack and the stone fire-place in the assembly hall are features of the park

Electrically Equipped Auto Park Is Municipal Asset in Boise

BOISE'S Auto Tourist Park was built during the spring and summer of 1918 and opened to the public on July 20, 1918. It was among the first, if not the first, tourist park established in southern Idaho. Touring by automobile was very much in its infancy and Boise was quick to appreciate the advertising value of courteous treatment to, and ample provision for the comfort of, those who visited the city in automobiles.

The first improvement consisted of an electric kitchen. The materials for this building were furnished by the local lumber companies and merchants and the labor was done by the labor unions. The electric appliances were furnished by the Idaho Power Company. Water was piped several hundred feet from a city main, the pipe being furnished by a wholesale hardware company. Money was contributed from various sources. This electric kitchen has introduced electric cooking to many women, from all parts of the country, who left feeling that as soon as they reached home they would look up the possibility of using electricity for cooking.

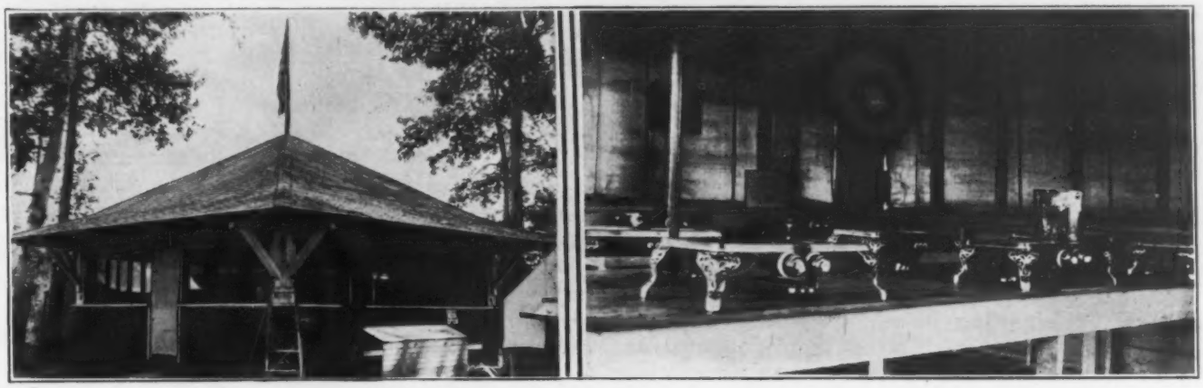
The next year other improvements were added in the way of additional toilet facilities, shower baths, and laundry room equipped with a Thor washer and two electric irons. An automobile wash rack was also built. With this equipment a party may enter the park with all the dirt and dust of a long trip, bathe themselves with hot or cold water, wash and iron their clothing, wash their car and feel "as good as new" before looking over the city, enjoying the amusements, or shopping in Boise's stores.

The greatest improvement was the erection in 1920 of an assembly hall with a ground floor of thirty-six feet by thirty-six feet, with a large fireplace constructed entirely of stone, donated by the Boise Stone Company.

The total investment in improvements reaches approximately seven thousand dollars. In the main the material has been furnished by the merchants and material men and the labor has been performed by the labor unions of this city.

During the 1922 season 3,442 cars were registered, carrying 12,107 passengers. Every state in the Union except Connecticut and Delaware were represented, Idaho having the largest number of registrations, with California, Oregon, Washington, Kansas and Illinois following in the order listed. There were three cars from Alberta and three from British Columbia, and two from the Philippine Islands.

The park has been in no way commercialized; the people who visit it are the guests of Boise and are treated as such. Many who came as visitors are now permanent residents of Boise City, or have purchased farms in the valley around.



Showing the community electric cook house and the arrangement of two-plate electric stoves within

Increasing Sales Twenty-Seven Per Cent by Use of Window Displays

By John W. Otterson

THROUGH the use of a series of feature window displays the Field Electrical Company succeeded in diverting pedestrian traffic from the opposite side of the street to its own side and added 62.3 per cent to its already large contracting business.

DISPLAYING his stock has always been one of the most important problems faced by the seller of goods. Competition for the consumer's dollar dictates that, regardless of what a merchant may have to sell, he must be prepared to create desire of ownership by showing the buying public that which he wishes them to purchase. The electrical merchant must display electrical appliances in such an attractive manner that the desire to have the equipment will be put into the mind of the person who sees it, just as the manager of the traveling circus must give people some idea of what they may expect to see should they come to his show.

The opportunities of the circus to display its stock are even fewer than those possessed by the average merchant. The location of the circus "lot" is, of necessity, usually such that it cannot be reached without some trouble. The publicity department must make an extra effort to show the "wares" of the circus at a place where it will be more convenient for people to gather, and attract them to the out-of-the-way location.

The electrical merchant often has the same problem as the manager of the traveling circus. Both must attract attention to what they have to sell. The manager of the circus having no display ground which is convenient to the densest population in the city, must bring his display to the public and endeavor to get them to come a little out of their way to see the display, which is the parade.

Locations which are passed by many people are greatly favored by merchants, and naturally command a higher rent. An established location is often an asset and in many cases it is not possible nor practical to move from it, even though more pedestrians may be passing on another street or on the opposite side of the street. In such cases it is necessary for the merchant to make his display of such a nature that it will draw the people to his store.

An excellent example of how an electrical contractor-dealer in southern California has overcome the disadvantage of "the opposite side of the street" is displayed by the Field Electrical Company, of San Bernardino. This company is located on the sunny side of the street in a city which is subjected to exceedingly warm weather. In addition, all of the business establishments on that side of the block are non-merchandising in character, such as real estate offices, a barber shop, bank and court house. On the other side of the street are retail stores with display windows. Although there is a theater on the same side of the street as the electrical store, it was found that the crowds uniformly crossed to the other side of the street before reaching the electrical store. A careful check over a period of two weeks showed that the advantage of the opposite side of the street was in the ratio of thirty-two to one.

The Field Electrical Company had therefore to display something which would have the attractive powers of the circus parade and which would change the direction of the traffic on the street. Some incentive had to be created to make pedestrians walk down the sunny side of the street in preference to the shaded walk on the other side. The company could not present a street parade to display its stock, nor could it attract the people by the use of a steam calliope.

A campaign of feature windows was inaugurated under the direction of George L. Black, the first display being exhibited in December, 1921. Six months after the campaign had been started the other side of the street still held an advantage of fifteen to one. After nine months the ratio had been modified to nine to one, and at the present time the ratio is two and six-tenths to one in favor of the opposite side of the street.

The Record of Increasing Sales

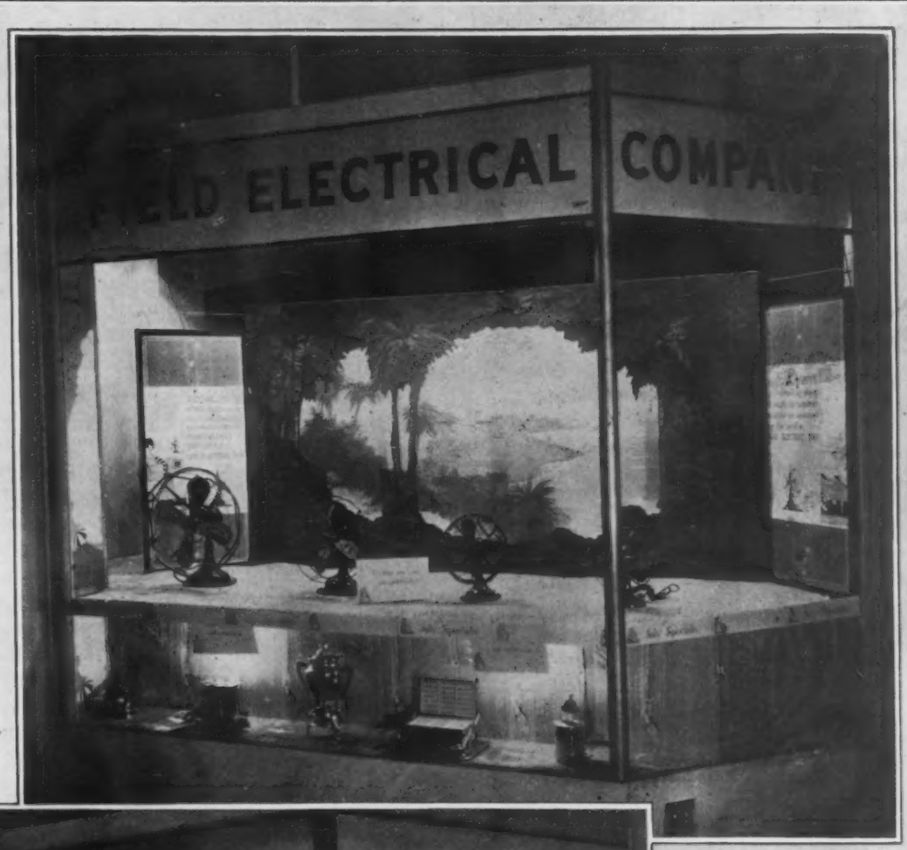
Within the first ten months, sales increased 27 per cent, at a time when other electrical dealers were reporting that sales were under those of the previous year. Contracting business showed an increase of 62.3 per cent over the months preceding and the sales of articles displayed in the windows showed an average increase of 39 per cent, indicating the direct sales value of the window over and above its major indirect purpose of general publicity and good-will.

The percentage of increase in sales from month to month, following the installation of the feature windows, compared with the same months of the previous year is as follows:

January, 43.8%; February, 33%; March, 24.5%; April, 62.3%; May, 25.8%; June, 47%; July, —16.6%; August, 24.5%; September, 28.8%; October, 17.6%; November, 36.7% and December, 43.3%. During December the company conducted the largest business in its history.

These figures apply only to the merchandising end of the business. The slump in July was caused by abnormally hot weather in San Bernardino. A large percentage of the population of the city moved to the beaches, taking away a large part of the market for electrical appliances. Following this loss,

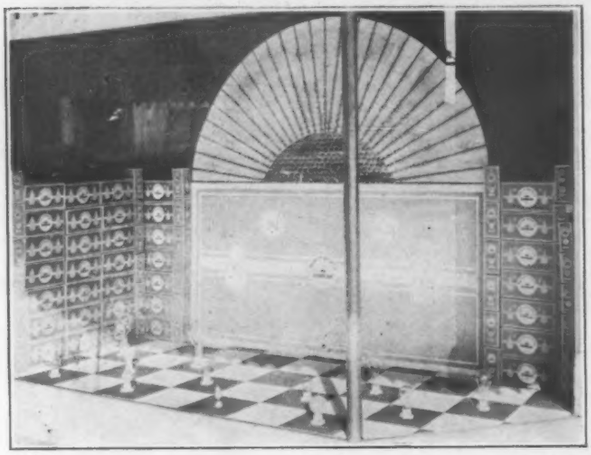
Windows that made Sales



Who could fail to notice that the display had been changed when the upper window displaced the lower one? Three periods of the day were portrayed in a scene depicting a cool summer resort: sunset on the ocean, twilight, and moonlight. The exceedingly warm weather called for the exhibit. In the June Bride window lighting effects were used to secure scenes in daylight with sunset over the mountain panorama, changing to night at two-minute intervals. In the second scene the lights in the house and church went on and tiny street lights illuminated the road. Colored gelatine was used in the church windows. The detail in the display was complete even to the small pond upon which miniature swans swam, the tiny growing ferns and the reduced size road sign announcing "Many Turns Ahead."

the Field Electrical Company increased its efforts to stimulate business and the August sales recovered as the records show.

One of the first principles adopted by Mr. Black in his display work, was that in a series of displays, it is necessary to make successive windows show contrasting effects so that when a change was made, no one could fail to notice the new display. This principle was carried out not only in the character



Eleven hundred cut glass crystals lighted by four X-ray reflectors were used in making the sun-burst which crowned this display. By the use of color screens on the reflectors the center of the sun-burst showed a deep red blending into all of the tints of a sunset. The large lamp carton was painted on beaverboard.

of the merchandise displayed, but also in the nature of the decorative scheme and particularly in the lighting effects. According to experts on lighting effects, the things constantly seen cease to be of more than ordinary interest, and by the addition of unusual lighting contrasts, a good window may be lifted into an important one. This theory has been amply proved by the Field Electrical Company, for its contrasts of lighting effects have been some of the most conspicuous parts of the display campaign.

The first window in the feature campaign, was a Christmas display which kept an interested crowd before it almost continually during the holiday season. It consisted of a very simple snow scene, made effective not only by the simplicity and good taste in design but also by a striking lighting effect.

Interest in the window was not evidenced solely by purchasers and visitors to the window, but almost every business man in town called in the store to find out how the effect had been produced. After the discovery that the people of San Bernardino were really interested in the window display, the company planned to continue the policy of feature windows and at the present time the windows are changed approximately every month. Exceptions are made where special holidays or occasions call for recognition. No set time schedule for the changing of the windows has been made, the company finding it better to allow the window to remain as long as it will hold the interest of the passers-by. As soon as interest begins to lag the display is changed. Windows featuring some particular time event are changed immediately after the event has passed.

Windows that Tell a Story

Some of the most successful of the windows used have contained no electrical merchandise whatsoever, and on certain occasions it is the belief of Mr. Black that the electrical interest should be entirely subordinated to the "story" of the window. A display of this kind seldom brings direct sales, but the public is attracted to the windows and added prestige is given to the firm.

Such a window was the one which marked the Easter season. No electrical merchandise was shown in this window, which was a reproduction of the city of Jerusalem in miniature. Through the use of changing lighting effects three successive periods of the day were portrayed. The first effect presented the city at noon, then after a short period this way the lights were dimmed and a twilight scene was visible. The third effect was that of the small city at night, lights came on in all of the houses and the evening star was seen in the background. Amber gelatine used in the windows of the houses made the observer feel as if he were looking down on the twinkling lights from a great distance.

San Bernardino was the scene of the National Orange Show last year and this event was the occasion for a window which not only attracted crowds throughout the time that it was displayed, but in addition took first prize in a window display contest, competing with the largest department stores in the city. The window was a miniature of the Orange Show itself. Being in a position to know in advance

One of the window displays installed by the Field Electrical Company before the feature display campaign was started.

what the decorations would be, Mr. Black worked for two months preceding the exhibit on this window which was complete in every detail. As one looked down on the miniature, he saw a continuous arcade of mission arches around the outer walls with a low overhanging tile roof, beyond the miniature oranges banked at an angle of 45 deg. Above the oranges was a panorama of the San Bernardino Mountains. Around a promenade, miniature California bears were placed on pedestals, and in the center of the arena, were feature exhibits of the show, including

a miniature electric fountain. The whole display was elevated to a height of about 3 ft., the space below being lined with oranges, to give the effect of a pedestal of oranges. Above the whole display was a large emblem, the "Sunkist" trade mark, done in cut glass jewels upon which four spot lights with color screen were focused. Over 150 flash light lamps were used in the miniature exhibit, mostly for flood lighting and spot light effects.

The arrangement of this window presents another of the fundamental principles of window display favored by Mr. Black. It is his firm contention that windows elevated to a point near the line of vision have much more drawing power than those with a lower base. In the case of small merchandise displays, a check showed that a window with the base elevated stopped an average of 22 per cent more people than did those where the merchandise was placed on the floor of the window. Where the window is to contain a combination of large and small appliances, the display is arranged to permit the window trimmer to place the merchandise on bases of graduated heights. Thus the larger appliances may be displayed in the front of the window without obstructing the view of the smaller articles which are placed in the rear. In addition this gives the display a definite scheme, indicating that the plan has been thought out beforehand. An effort is always made to display the merchandise in the circumstances under which it is to be used.

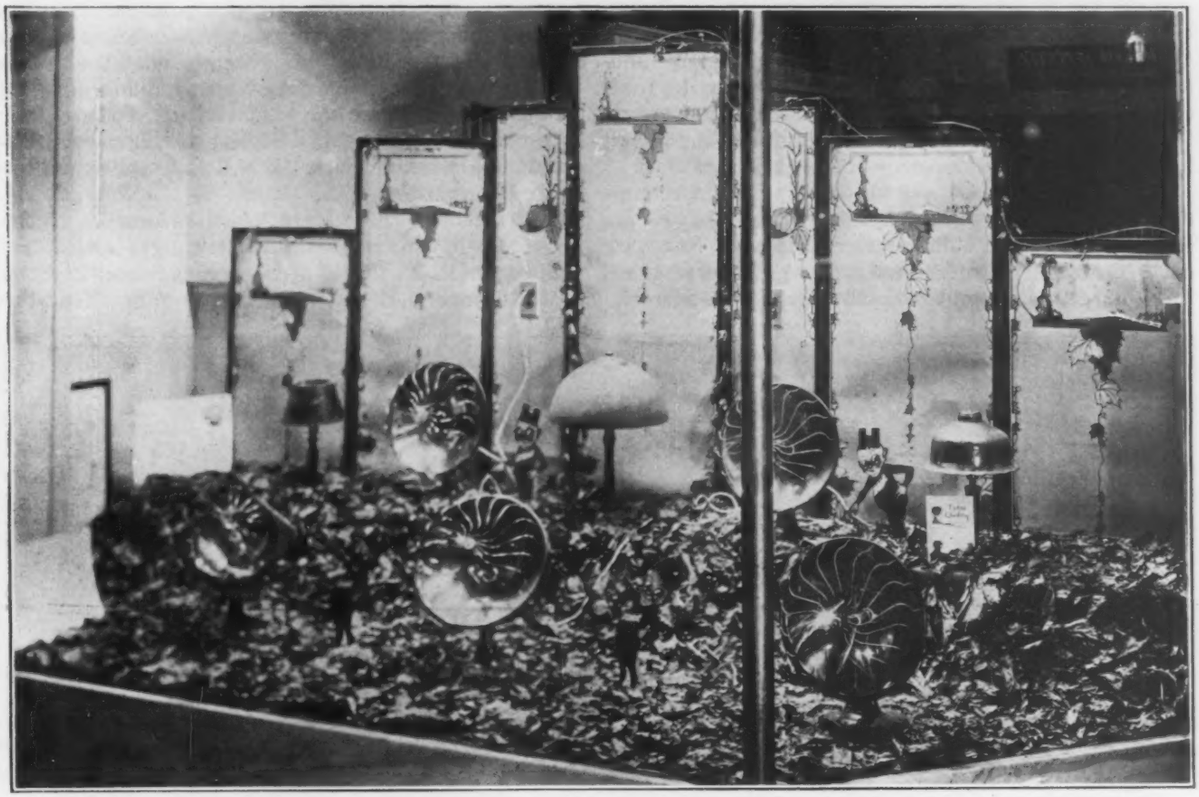
The Field Electrical Company has proved that the idea of a series of window displays is profitable and it will continue the campaign, for, as Mr. Black says, "We have educated the public to expect something new each month and we dare not turn back."

Other Merchants to Follow the Leader

The result is that 37 per cent of the firm's contracting business is in bringing old show window installations up to the new standards. The company has eliminated all competition in this field, for the merchants of San Bernardino have come to realize that the Field Electrical Company is the leader in the art of presenting window display features.

The company feels that few merchants realize the full value of their window displays. The Field Electrical Company has kept a record of increased sales and actual shifting of traffic due to the attraction of its windows, and feels that sales amounting to many times those which can be traced to any one window will result from the good-will and prestige established.

An indirect result of the feature show windows of the company, was an increase in the intensity of window lighting in San Bernardino, amounting to 754,200 lumens in the first six months of the campaign. Such an increase, of course, meant that the electrical dealer profited from the sale of lamps, reflectors and accessories—business which was an indirect result of the campaign waged to draw the people of the city to the other side of the street.



By elevating the smaller articles placed in the rear of the window, the window-trimmer can make them stand out as much as the appliances in the front of the window do. Note how attention was called to the convenience outlets, which were located at a point near the line of vision.

Future of Electrical Industry Discussed at N.E.L.A. Section Meetings

By S. W. Bishop

THE possibilities of the electric range, the development of the residence and store lighting load, discussion of new types of drive and control which will increase production and lower operating costs, furtherance of the use of electric cars and trucks in the cities, improved and more efficient methods of wiring, central station merchandise selling methods, and a continual round of entertainment and good time reflects the high lights of the recent commercial section and wiring committee meetings of the N.E.L.A. which were held in Denver, Jan. 24-26.

With a registration of over 63 from points outside of Colorado, the attendance, according to Oliver R. Hogue, commercial national section chairman, was far above expectations which, together with the interest manifested by western electrical men and especially the central station operators of the Rocky Mountain region, fully justified holding the meeting in the West, and the success which was encountered guarantees beyond a reasonable doubt the fact that other important national sections and committees will hereafter meet in the West.

All business meetings with the exception of that of the wiring committee were held in the offices of the Denver Gas & Electric Light Company and according to reports it was principally due to that company and the other electrical interests in Denver that the smooth running arrangements and the social features were provided.

Unusual interest was manifested in the merchandise sales bureau meeting presided over by F. D. Pembleton of the Public Service Company, Newark, N. J. Over one hundred were present at this session. Two subjects stood out over all others—the electric range as a favorable power factor and revenue producer, and salesmen, their methods, compensation, and education.

Nearly the entire time of the first session of the bureau was given over to the range bureau. Discussion brought out the fact that many eastern central stations, especially the smaller ones, have thus far developed little interest in the range. At the same time, however, a number of the western and Pacific Coast members representing the principal central stations west of the Rockies, were able to present the complete analysis of the problem in the light of their experience during the past ten years. Although, as was stated by several of them, the range business has been purposely conservatively developed, it appeared from the discussion that eastern conditions had been developed even more conservatively. Officials of the largest companies producing ranges were present and took an active part in the debate, especially George Hughes, president of the Edison Electric Appliance Company, and M. C. Morrow, of the Westinghouse Electric & Manufacturing Company.

C. O. Dunten, Central Illinois Public Service Company, chairman of the range committee, in his report which was accepted for presentation at the national convention in June, recommended the preparation of comprehensive data which could be supplied to all members and the issuance of at least four consumer booklets by the Society for Electrical Development, working with the N.E.L.A. and manufacturers' committee.

Frequently there were heard references to the high cost of the more desirable ranges and it remained for R. W. Clark, of the Puget Sound Light & Power Company, a central station man, to defend the

The commercial section meeting of the National Electric Light Association attracted these men and their wives to Denver. Reading from left Mrs. Frank J. McEniry, Mrs. D. R. Gibson, Mrs. O. R. Hogue, H. A.Lane, A. Goldman, A. W. Childs, J. L. Lufkin, A. F. Berry, J. R. Coxe, Sidney W. Bishop, George F. Oxley, Mrs. J. J. Cooper, Harold Wright, Wm. L. Goodwin, Oliver Hogue, W. A. Moser, H. S. Sands, L. J. Brid Tallman, George E. Lewis, N. T. Wilcox, J. J. Kirk,

manufacturers. He explained that it was his personal belief that the trouble would be found to lie in the hands of the central stations because they do not produce sales in sufficient volume to bring the price down through greater production. It was later brought out that electric ranges sell for 2.8 times as much as standard gas ranges, the difference in price having something to do with the popularity of the cooking medium.

The wonderful possibilities in the residence and store lighting load which comprises at the present time 58 per cent of central station revenue were outlined by G. Bertram Regar, chairman of the lighting sales bureau, and it was the decision of that bureau to confine its effort, during 1923, to these specific phases having in mind the ultimate doubling of intensities in the average home and store.

New types of drive and control which will increase production and lower operating costs were discussed by the power sales bureau of which C. K. Nichols of the New York Edison Company is chairman. It was pointed out by western men that there exists a large field in the further electrification of the lumber industry and oil wells of California. It was reported that there is at this time 50,000 hp. of motor drive in the oil fields of the state on the lines of one central station and that the biggest problem there, is the application of electricity to drilling, as manufacturers apparently do not produce the type of equipment required for such service.

Success of the industrial heating school movement resulted in a decision of the power sales bureau to establish such schools in the more important industrial centers in cooperation with the various geographic divisions.

Many interesting facts were reported from the larger metropolitan districts on the more economical operation of electrical vehicles as against other types and the increase on central station loads as the result. Charles R. Skinner, Jr., of the New York Edison Company presided. Later at the executive committee meeting it was decided to change the name to "Electric Truck and Car Bureau."

R. S. Hale, of the Edison Electric Illuminating Company of Boston, presided at the standardizing and testing division, electrically equipped furniture, and national wiring committee meetings. At the latter, which was a whole day session, at the Brown Palace hotel, about ten members of the national committee were in attendance. Among the principal subjects discussed were the 660-watt rule and the thoroughly grounded neutral.

The national convention in June will be of unusual significance to commercial department executives, judging from the discussion of the section executive committee, on the last day of the meeting. Selling methods and business getting ideas it is believed will be the chief items of interest, in the opinion of O. R. Hogue, the section chairman. He also believes it will be a splendid opportunity for all commercial men to become thoroughly acquainted with the more and better business movement which is being sponsored by the N.E.L.A.

Entertainment as provided by the Denver Gas & Electric Light Company for the visitors included a theater party, a banquet on the following night at which nearly 200 electrical men were present, a motor tour of the Denver mountain parks followed by a trout dinner and dance at the Motor Club in Bear Creek Canyon. At the banquet, John J. Cooper, chairman of the Denver Electrical Cooperative League, presided and the principal speakers were George Hughes, William L. Goodwin, A. K. Baylor, R. S. Hale, H. E. Lane, Samuel Adams Chase, O. R. Hogue and J. Frank Dostal, president of the Rocky Mountain geographic division.

All the visitors attended the weekly meeting of the Cooperative League, Jan. 24, and on Jan. 27 about forty-five of the visitors made a one-day trip to the Colorado Springs region. George Hughes and J. F. Roche of the Edison Electric Appliance Company were hosts at the Antlers Hotel for luncheon and in the evening the Colorado Springs Light, Heat & Power Company entertained at the Broadmoor Hotel through O. F. Lackey, vice-president, and J. Frank Dostal, general manager.

to right they are: Mrs. O. H. Caldwell, Walter C. Heston, Mrs. Wm. E. Clement, Frank J. McEniry, Mrs. Fred R. Jenkins, W. S. Byrne, Charles R. Skinner, Jr., Horace S. Meese, O. G. Kirk, D. C. Ray, Ernest Pragst, L. C. Spake, Mrs. R. G. Gentry, J. L. Harvey, J. F. Roche, ger, H. E. Sandoval, Bernard Lester, [illegible] Bowley, J. J. Cooper, Walter Fagan, Fred R. Jenkins, Wm. E. Clement, C. K. Nichols, Vernon M. F. E. L. Milliken, Harry Bullock, A. M. Frost.

ELECTRICITY IN INDUSTRY

By Louis F. Leurey
Industrial Electrical Engineer

Fitting Electrical Lifting Magnets to the Needs of the Industrial User

DURING the war there arose proposals that ships be equipped with huge magnets which, when energized, would draw submarines to them where, being helpless, they could be destroyed. In peace times equally impossible proposals are made with respect to magnets. Such propositions overlook the fact that while magnetism may be detected through long distances by means of delicate instruments as, for instance, the earth's magnetism by the compass, yet drawing power in large, usable, effective quantity can only be exerted through short distances up to 12 or at most 15 in.

Where the magnet can come near or in contact with its pull or its load it is wonderfully effective as its universal use in steel mills, blast furnaces, foundries, forge plants, scrap yards, railroad yards and all other places where iron or steel in quantities must be handled proves, and in all such situations a magnet will save its own cost in a very short period of time.

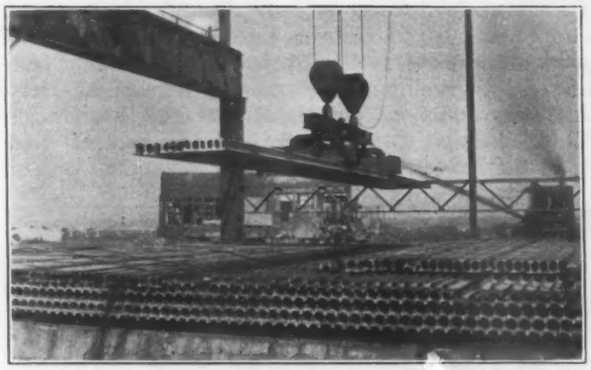


Fig. 1—Two super-rectangular magnets lifting 15,600 lb. of railroad rails

Most magnets are used for loading or unloading iron or steel materials but there are many related uses not so common or well known but equally interesting and important economically. One of these latter cases is quoted below.

Fig. 1 shows two super-rectangular magnets mounted on a beam and controlled in parallel by the operator in the crane cab. These magnets are two of nine used by the rail mill of the Inland Steel Company at Indiana Harbor, Ind., to handle and load its product. The load shown consists of thirteen 90-lb. per yard rails each 40 ft. long, the total weight of the rails being 15,600 lb. These magnets require little head room, are strong mechanically and all their magnetism is concentrated at the lifting point. They will lift seventeen or eighteen such rails if stacked in double locked layers.

Magnets in the Mining Industry

A magnet about 40 in. in diameter and having an energized coil wound for continuous service supported above a belt conveyor carrying silver ore at the Fresnillo, Mex., plant of the Mexican Corporation, S. A., is shown in Fig. 3.

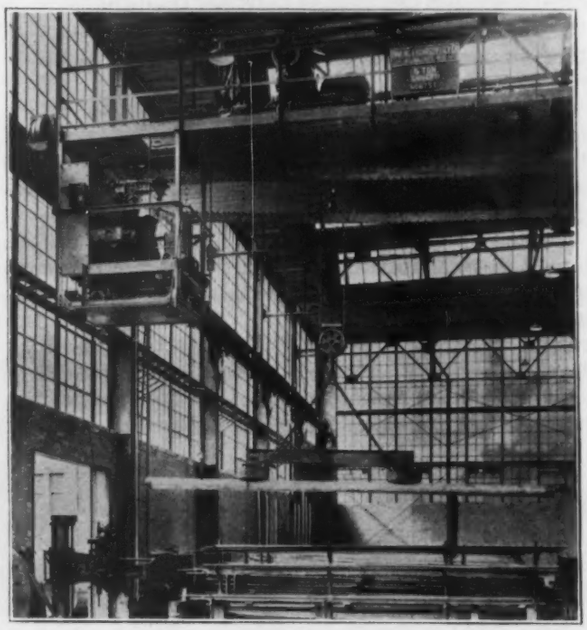


Fig. 2—Two round magnets used to handle pipe in a Chicago warehouse

Fig. 2 shows two 20-in. round magnets on a beam and controlled in parallel by the operator in the crane cab and used in the Kelly-Jones, Chicago warehouse, to store and afterward to re-load, on delivery wagons, pipe from the smallest to the largest sizes. The system is effective and saves considerable time and space. The Crane Company's pipe warehouse in Pittsburgh has similar equipment.

The object of this installation is to extract stray or tramp iron or steel from the ore as it passes under the magnets. If such pieces are not taken out they will break the crushing rolls causing great delay and expense. Small magnets have been in use for this purpose in flour mills for some time but in late years many large ones, such as that shown, have been used over belt conveyors of copper and lead ores, coal and other materials to save the crushing of machinery, and in some cases also to prevent the admixture of iron with the product.

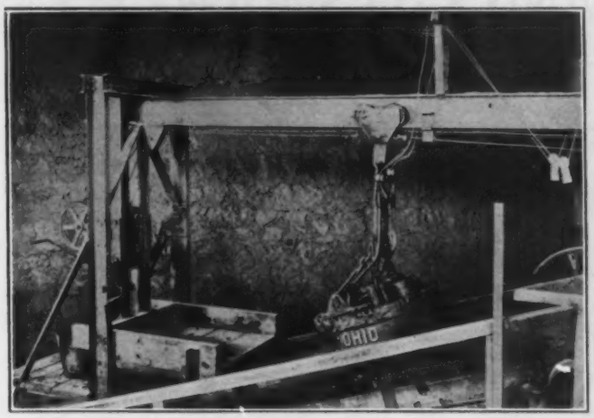


Fig. 3—Continuous service magnet to pick small pieces of iron from a conveyor carrying silver ore

There are many other useful and interesting special magnet applications, but always the limitations noted in the first paragraph must be remembered. Many Pacific Coast concerns are now using these magnets but they are being used principally on the rather commoner forms of application.

The Electric Furnace in the Western High Grade Metal Foundry

ONE of the important undeveloped markets for electric usage in the western states is the application of electricity through the medium of the electric furnace in the melting of brass and in the production of a high grade of electric steel.

With the heavy investments made recently by the major power companies of the Pacific states, resulting in an enormous increase in facilities for electrical service, a great amount of interest is being aroused in installations of this character. For a number of years it has been a well known fact that electricity offers many advantages in its applications in furnaces that are not offered by the primary fuels. A great curtailment of stack losses in melting brass and other metals of a similar character has led to its introduction to a wide extent in this field. The ability to produce steel of a high and exact quality by controlling the heat and mixture has also led to considerable development in this department.

The only handicap to date has been the question of electric rates, and in view of the recent reductions in rates among the major power companies of California there should be a considerable stimulation for new business along these lines. Engineers are studying with a great deal of interest the application of the new rates but sufficient time has not yet passed to tell whether they will be more favorable to the electric furnace than the older rates which were in effect prior to Jan. 1. The proposed new rates give considerable prominence and advantages to high load factor features and all such applications as come under this class will undoubtedly receive a very decided benefit from the new schedule.

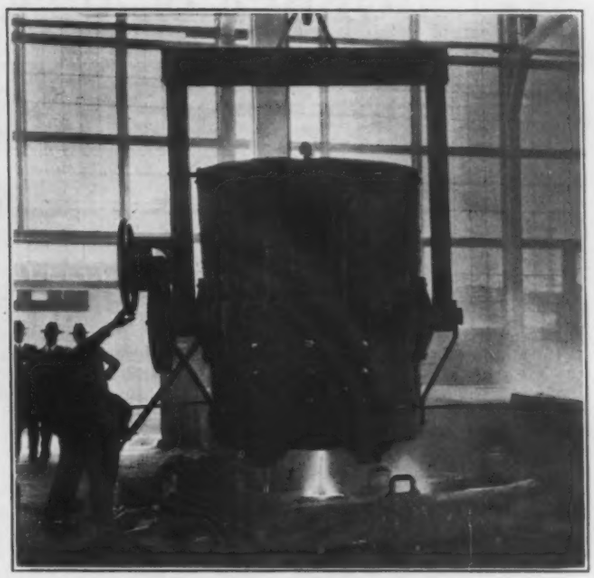


Fig. 4—Pouring metal from electric furnaces operated by the Electric Foundry Company, of Sacramento, Calif.

Fig. 5—An electric furnace ready to discharge high grade metal to be cast into ingots

Figs. 4 and 5 show applications of the electric furnace with the metal being poured into the molds, at the Electric Steel Foundry at Sacramento, Calif.

JOBBER, DEALER AND SALES AGENT

Sell the Electrical Product to the Industry First

The Salesman Must Be Enthused Over What He Has to Sell Before He Can Interest the Possible Customer

By J. E. BULLARD

In building a market for any product, success depends upon how many people can be made to want it and how much they can be made to want it. The automobile industry has grown to the vast proportions, largely because so many people have been made to want an automobile more than they want anything else. Many people will make any sacrifice in order to own an automobile.

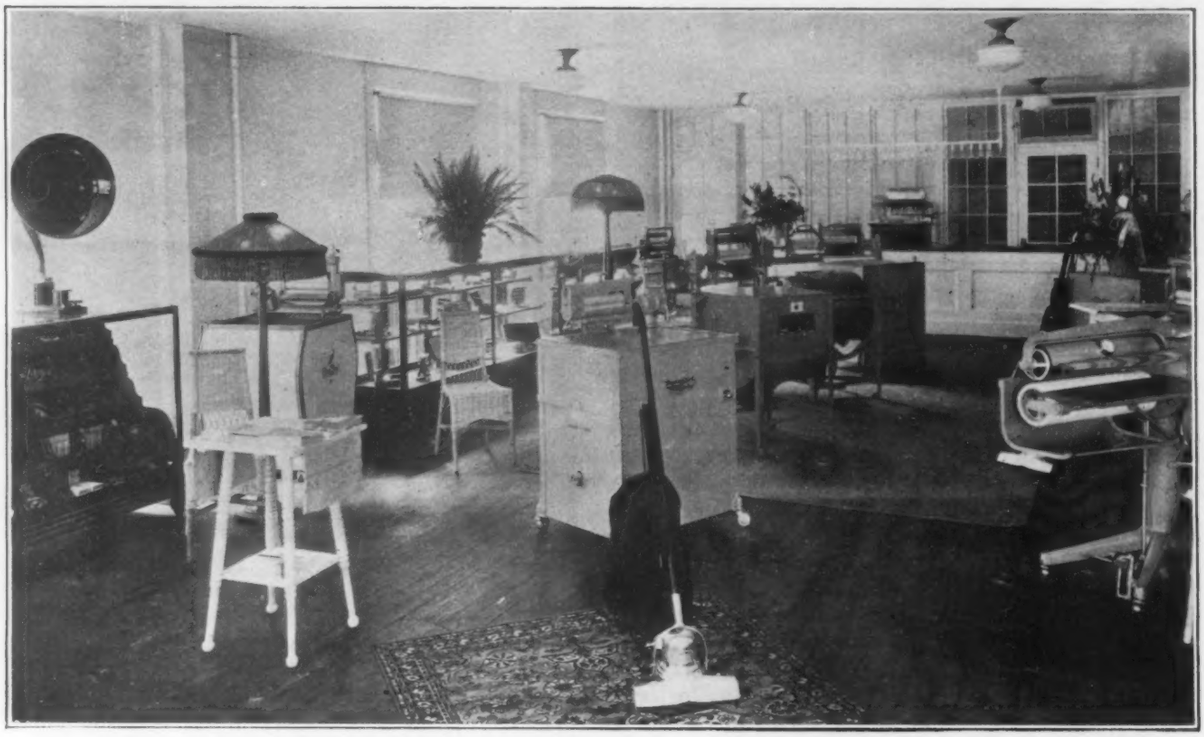
A manufacturer of men's hats made an investigation which indicated that the sales of men's hats and of clothing for men had actually fallen off more than they should have, during the depression, because men wanted to own a new automobile or to keep the old one running more than they wanted a new hat or a new suit of clothes. It was just a case of spending money for that which was most desired.

The desire for automobile ownership is a fact. It has been brought about by extensive advertising and publicity, but the automobile manufacturer had something greatly in his favor. The automobile a family owns is something that all their friends and neighbors see. It provides a display of prosperity that has never been possible before. It appeals to the vanity and the pride of people to an extent that even fine clothes do not. Here is an appeal that cannot be made in building a market for all products.

The owner of a washing machine, for example, cannot display that machine to as many people as can the owner of an automobile. Perhaps that is the reason why there are some ten or twelve million automobiles in use and only about two million electric washing machines.

One of the best ways to make other people want that which we have to sell is to make everyone in the industry want it to such an extent that they will make great sacrifices in order to possess the electrical business used all the electrical appliances on the market, even though these had to be sold to them at the manufacturer's cost. It would help a great deal more, if everyone could be made to want them so much that they would make every possible sacrifice to possess them. It is far more profitable in the end, to spend the money in making the employees want these appliances, than it is to allow them discounts on their purchases.

An incident that occurred in a jewelry store recently shows how the desire to own a thing may be made strong enough to overcome even serious objections. A man entered the store to look at some diamonds, and was waited upon by a stone expert who knew practically all there was to be known about diamonds. He showed the customer various stones of about the quality desired and came to one that made a special appeal. This stone, however, was just a little more expensive than the customer had planned to buy. He was about to leave the store when the owner came up and began talking to him. Before the man left the store he bought the stone.



A show room of this character will instill enthusiasm in the salesmen of the firm and confidence in customers who enter to purchase electrical goods.

The question naturally arises as to why he would not buy it from one man and would from the other. The answer is, the difference in the attitude taken by the clerk and the proprietor towards precious stones.

The clerk had only a scientific interest in these stones. He was interested in diamonds only as stones and he had no very great desire to posses them. The proprietor of the store was in this business because he loved precious stones. There was not a stone in his entire stock that he would not have liked to have had for himself. All of his profits he did not have to put back into his business, he was using in building up his own private collection of stones. When the owner of the store talked to the customer he brought a new selling force to bear. He had an enthusiasm for that stone that was contagious and the customer caught this enthusiasm to such an extent that he felt that he would be losing a great opportunity if he left the store without the stone.

This kind of enthusiasm is more effective in building a market for any product than any other business building medium. The difficulty lies in making it sufficiently widespread.

If all the employees and all the stockholders of all the central stations in this country, if all the contractors and all the dealers in this country, if all the manufacturers and their employees were as enthused over the use of electrical appliances as this jeweler was over the possession of precious stones, it would not be long before there would be many million more washing machines in use than there are now. Those people too far from any distribution system to be able to buy central station current could be influenced into installing plants of their own in order that they could use electric washing machines and other appliances.

There are in this country more than twenty million families. The cost of electric current and electric washing machines is now so low that every one of these families may well be considered as a prospect. Where the income is so low that the mother must take in washings to help support the family, the washing machine will help her make more money because it will enable her to do more washings. By purchasing the machine on terms she will be able to use her increased earnings with which to pay for it. Therefore, it is not wise to deduct any of the twenty million families as those which are not possible purchasers of electrical washers.

As a matter of fact, the practice of limiting the number of prospects for any article or service to a certain class is dangerous, if for no other reason than because it makes it appear as though those who sell were making a better showing. There is no real excuse for any contractor, dealer, or employee of an electrical company not owning an electric washing machine. There is certainly no excuse for the stockholders not owning them.

The whole thing simmers down to a lack of sufficient desire to own one. A lot of these people would rather own an automobile than an electric washing machine and they do own an automobile and have no electric washing machine. Ask any group of people connected with the electrical industry, just how many have an electrical washing machine at home and there will be a large proportion who admit that they do not own one. Usually there will be a larger number who own their automobiles than who own electric washing machines.

The same thing is true of all other electric appliances. The electric washing machine is not always considered the one electrical appliance that should be in almost universal use. This is partly due to the fact that not sufficient enthusiasm has been aroused for it. Yet as has already been stated, there is not a reason why it should not be sold to every family to which a supply of current can be given. The poor washwoman may prove to be a better prospect than the person with a larger income. It is the domestic appliance that perhaps offers greater possibilities than any of the others.

One reason why more electrical appliances have not been sold is that it has been taken too much for granted that all people employed in the electrical industry will buy these if they can afford them. That little word 'afford' has stood in the way of thousands upon thousands of sales. It has given a perfectly good excuse to a lot of people for not buying. Yet the strange thing about all this is that though these same people can't afford to buy electrical appliances they do seem to be able to buy automobiles. After all, it is not a case of affording a thing, it is a case of desiring it. Let anyone desire anything to a great enough degree and sooner or later he will find some way to possess it.

Fifteen years ago anyone who predicted that as many automobiles as are in use today could be sold, would have been called insane. Statistics could have been quoted to show that it would be impossible to sell so large a number of cars in a country of 105,000,000. Pessimists said that there simply would not be enough people with incomes large enough to buy them. Yet today we find women take in washing to earn the money necessary to pay for the gasoline needed to run the family car. It is just a case of creating a desire.

The electrical man who has an installation in his home similar to this, is in a position to know of and become enthusiastic over the actual operation of the appliances. His enthusiasm will be passed along to customers he meets daily.

Just at the present time, one thing that is exceedingly important in the electrical industry is to create a greater desire on the part of those engaged in the industry to own appliances. It must be borne in mind that, compared with the prices of automobiles, all electrical appliances are inexpensive. Therefore, it is quite evident that if a family doesn't have these appliances it is because they are not desired. If those in the industry don't desire them enough to possess them, how can we expect those outside the industry to desire them, especially to the extent of putting off buying something else in order to buy electric appliances? To build a satisfactory market for electric appliances, then, it is necessary to create a greater desire for them on the part of those engaged in the industry. Here is an opportunity for some real salesmanship.

New Contract Form Prepared for Electrical Men

Legally Correct Form to Protect Contractor on Bids Submitted for Installations that He Has Figured

The contract which the electrical contractor presents to the home owner whose house he intends to wire has long been a rather clumsy affair. There have been as many styles of forms for these contract blanks as there have been men engaged in the business. Every electrical contractor has had rather bitter experiences with these forms, often finding that they could not be enforced at court.

Many efforts have been made by individual contractors, to establish a form which would be flexible enough to make it usable in all cases and which at the same time would not be too complicated or involved. The average contractor does not want to be bothered with a mass of detail to be observed while making out a contract and yet he wants to have definite specifications for the job, written into the contract which is to be signed by him and the house owner.

In the past a number of contractors have not had the opportunity to organize a plan for the formation of a contract blank, and have as a result often used forms which were vague and of no real value to the contractor or the person owning the house. These forms have often been of such a nature that they had no legal standing, and provided no protection to either party to the agreement.

Cooperative associations of contractor-dealers have endeavored to bring out forms which could be adopted as the standard for use by members of the association, but most of these suggested blanks have been found to be lacking in some vital part. The greatest trouble experienced has been in making the forms legally "leak-proof." Omissions of items that, to the electrical contractor, might seem of trivial importance, have been found to make the contracts invalid when taken to court by the contractor trying to recover a judgment against the house owner. Several feasible methods of laying out the items to be included in the contract, have been used, but stipulations concerning the rights and duties of the two parties to the contract have been neglected.

One of the principal things that has not been covered by the contract forms prepared in the past, is the protection of the contractor working on a building which is covered by a lien of some character or other, thus precluding him from attaching the property, should he be forced to take action to recover for work done on it.

In an endeavor to correct some of these evils of the haphazard contract form, the Los Angeles branch of the California State Contractor-Dealerers' Association worked out a form which relieves the contractor from any doubt as to the validity of the contract. In drawing up the form, the association secured the services of Earle E. Moss, a Los Angeles attorney, in order that the form might be legally correct in every detail.

The face of the contract, which is shown on the opposite page, is made up to facilitate the listing of the items that were considered in making out the estimate sheet. The price of the job is listed on the sheet, thus giving the builder of the structure a signed statement of the cost to him and when this sheet is signed by both the contractor and the builder, it is a binding agreement between them.

The arrangement of the sheet gives the contractor an additional check on his estimating figures, as he transfers the several items from that sheet to the contract form before presenting his estimate to the builder. Thus should he have failed to figure any item while making the estimate, this will show up while making the entries on the contract as one upon which no price has been placed. The contract also stipulates that the price quoted includes only those items specifically mentioned, thus giving still greater protection to the contractor.

On the reverse side of the contract, all of the necessary terms and conditions to make the contract binding, are printed. The stipulations are as follows:

"All work to be done in a good and workmanlike manner, and in accordance with the ordinances, if any there be, of the city in which it is to be performed, and with the laws of the State of California, and when not covered by such ordinance and laws, the rules of the National Board of Fire Underwriters shall apply.

"Should there arise any condition to necessarily hinder carrying on the work as specified and ordered, and over which the electrical contractor has no control, the electrical contractor is at once entitled to and must be paid on demand an amount not less than 80 per cent of the estimated cost of work that has been performed and material furnished, and that the balance of the estimated cost of work performed and material furnished must be paid within sixty days from date of notice by the electrical contractor of his inability to further proceed with the work.

"In the event of the failure to pay any installment or installments on the contract price herein provided for. when due, then the electrical contractor at his option, which option shall continue during all the time of such default, may remove from the premises any materials or fixtures that shall or may have been installed therein by him or delivered by him to the premises, and may apply the value of such materials or fixtures so removed on account of any indebtedness due him on the contract. The option herein provided for shall be in addition to any and all other remedies the electrical contractor may have to enforce his contract, either in law or equity.

"The electrical contractor is not familiar with the condition of the legal title to the property covered by this agreement, and if at the time of the execution of this agreement or at any time prior to the actual commencement of work by the electrical contractor under this contract, it should appear that there is a trust deed, mortgage or judgment lien upon said property, or said property is subject to a first mortgage or first deed of trust, then and in that event the electrical contractor may, at his option, refuse to further proceed with the work, and the electrical contractor shall in no way be liable for any damages whatsoever by reason of such refusal. In the event the electrical contractor shall abandon the work for either of the reasons above stated, or in the event of loss by fire, the price mentioned herein for the completed work shall be disregarded and payment in full for all work done to that time shall be immediately due and payable, the value of such uncompleted work to be determined on the basis of the cost of labor and material to the electrical contractor plus 25 per cent of such cost.

"If suit be commenced or other legal proceedings be taken to enforce the payment of any amount due under this contract, a sum equal to 25 per cent of the amount of this contract shall be added to such amount for attorney's fees.

"Payment for roughing in work or allowing later work to proceed shall constitute an acceptance of the roughing in work as satisfactory and no claim shall be made against the electrical contractor for damages or errors after the work has been passed by the city inspector. 'Roughing in' work includes only work necessary to pass 'Roughing in' inspection under the ordinance, laws or rules governing the work. The electrical contractor shall not be responsible for damage to fixtures after they are installed. The electrical contractor shall not be held liable for any loss, damage or delays occasioned by fires, strikes or other causes beyond his control.

"Any change in the location of an outlet from that shown on plans or as originally agreed upon shall constitute an extra outlet, payment for which shall be made on a time and material basis.

"All appliances, equipment, fixtures, switches, and other material or property of any kind or character whatsoever, which may be removed from the structure upon which they have been placed by the contractor under this agreement, without the destruction of any wall, floor or foundation, shall not be considered as affixed to the said premises, and shall remain the property of the contractor until full payment for same shall have been made. All payments made under this agreement shall be applied first to the payment for labor, and secondly to the payment for material affixed to said premises, and the remainder to the payment for fixtures, appliances, equipment, switches and other property furnished or owned by the contractor."

The contract form has been adopted by several contractors in Los Angeles already and the branch of the California State Contractor-Dealers' Association in that city is considering adopting the form as a standard one to be sponsored for use by association members. The form has not been copyrighted and can be used by any contractor wishing to use it.

The form can be printed upon the regular letter-head of the contractor by any printer and could be put out in medium sized quantities at a reasonable price. The reverse side of the contract will necessitate the running of the form through the printing press twice, but the added protection will make this expense well worth while.

Owner .....Address..... Phone.....

Builder .....Address..... Phone.....

Location of building.....

Billing address .....

Rooms	Ceiling Outlets	S. P Switches	Bracket Outlets	Three-way Switches	Convenience Outlets	Iron Plugs	Watts	Bells	Rooms	Ceiling Outlets	S. P. Switches	Bracket Outlets	Three-way Switches	Convenience Outlets	Iron Plugs	Watts	Bells
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Total.....									Total.....								

The estimate for furnishing the necessary labor and material for complete installation of wiring, as above specified, is.....

.....Dollars ($.....), payments to be made as follows: 70% of the contract price when the roughing-in inspection is passed; balance when the final inspection is made. Payments for all extra labor and material shall be made at the time such extra labor and material are furnished. This estimate is governed by the terms and conditions herein contained and printed on the back hereof.

If not accepted in writing, this offer shall expire.....days from its date.

Dated.....

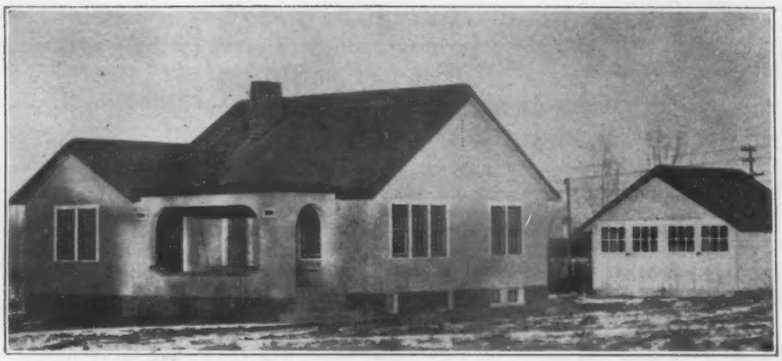
Accepted: ....., 192.....

.....
Electrical Contractor.

....

By.....

This form for the presentation of bids on electrical installations figured on by the contractor was prepared through the cooperation of the Los Angeles branch of the California State Contractor-Dealers' Association and an attorney of the southern California city. It is designed to enable the electrical contractor to present a contract to the builder of a structure which will be compact, complete and legally binding upon both parties to the agreement. The reverse side of the model form is reproduced on the preceding page and both sides make a complete legal contract.



This five-room bungalow, belonging to a Greeley, Colo., man, was displayed as an electrical home by the electrical interests in the city

The Electrical Home and the Small-sized City

Colorado Owner Loans Residence to Permit Electrical Men to Present Modern Ideas to Rocky Mountain City

Approximately 5,000 people were shown how the modern home can be electrified, when through cooperation by the central station company, the electrical dealers, the house furnishing company and the owner of the home, an electrical home was exhibited in the town of Greeley, Colo. The home was open to visitors for eight days only and during the time it was exceedingly popular with the residents of the town, which has a population of about 11,000.

Immediately after the home was put on display beneficial results were felt by all of the electrical contractors, and other firms cooperating in the display were rewarded in like manner, according to L. R. Storey of the Home Gas & Electric Company, the central station which sponsored the exhibition.

The home was designed and built by A. M. Kindred for W. F. Jones, an employee of the Greeley central station, and was arranged with a view to its being exhibited as a model electrical home as a result of the electrical home which was displayed in Denver last summer.

Working with the builder of the house the electrical men arranged to install outlets and appliances to make the house fully an electrical one. During the wiring of the home, the power company officials and the electrical contractors worked together to secure the most advantageous arrangement of outlets, switches and conduit.

This system was found to be fairly equitable and all concerned were satisfied with the locations given to them. During the exhibit, all of the firms were allowed to have their representatives present that their appliances might be demonstrated to the visitors. As it worked out, the general thing was that there were about four or five guides present at all times to conduct the guests around the home and to give information.

Furniture and general furnishings were provided by a local furniture store. Everything was supplied which would make the home attractive and livable.

In planning the illumination of the home, it was decided to eliminate overhead fixtures. Wall brackets, floor lamps, and table lamps were the only lighting fixtures installed. Particularly pleasing lighting effects were secured in this way, and many new ideas in illumination were given the home owners of Greeley.

At the fuse box preparation was made for replacing fuses in the dark. A small electric light was attached to the line ahead of the fuses, so that if the fuses were blown, the home owner could replace them by this light which would not be affected by the fuses.

Instead of connecting with the distribution lines of the power company with overhead wires, the electrical contractor in charge of wiring the home used conduit which was laid underground. Underground conduit was also used between the house and the garage. A two-way switch controlled the garage lights.

Among the electrical appliances and devices installed in the home were: a ventilating fan for the kitchen, an electric water heater with automatic control, an electric fountain, an electric range, an electric refrigerating machine, electric washing and ironing machines, and an electric vacuum cleaner. Convenience outlets were placed in every room in the house and were located so that they were readily available for use. Several three and four-way switches were placed in the home to enable the owner to control the lighting of halls from different points.

The purpose of the electrical firms was to increase the number of electrical appliances in use in Greeley. No particular style or make of appliance was featured. All of the lines of electrical appliances sold in the town were exhibited and the results show that the display was well worth the effort spent.

The electrical firms that participated in the demonstration were: The Home Gas & Electric Company, the White Electric Company, the Bryant Electric Company, the Greeley Electrical Supply Company, and the Herdman Electric Company. According to the men from these firms the plan of displaying a home, built by a man for his own use, is an exceptionally good one to follow in the smaller community.

The home was well supplied with electrical features, as may be seen in these two views of the dining room and living room

Where the West Begins

By JOE OSIER

Speaking as one Westerner to another'n, comma, I would like to meet up with the poet who dashed off—

"Out where the West begins."

That hombre, I reckin, is keen; he has romance in his soul, and to prove it, he filled his song with artistic touches and color and, also,

He is a booster—the kind of a booster that puts pep in every party—that makes the boys "throw up their sweaty nightcaps" and, with sheer delight yell:

"E-yah! Let'r buck!"

However, I am sorry this poet did not add:

Out where the juice is a little stronger—
Out where the kilowatt's a little longer—

And all that sort of thing.

Still, I should be satisfied because he certainly boosted the West and that is my game—from the pink tipped dawn until the silent shades of evening are drawn.

He talked, you remember, of the strong sunlight—of the life giving ozone and the hearty handclasps, then wound up with a burst to high heaven about—

"Out where the West begins" and—

I contend, regardless of what my critics may say, that any section of any country, no matter how admirably it is located, needs a flock of press agents to place it and keep it on the Rand McNally.

Therefore, it is up to all of the "pards," west of the Rockies, to get to-gether, yelp to-gether and do a heap of concerted boosting in order that Our West may assume its rightful place and be favorably known throughout the length and breadth of this North American Continent.

The task of advertising the West is easier, by far, than dropping slugs in a collection box because the copy is prepared for us.

How easy it is to sing the glories of our snow-capped mountains—our purple plains—our stately forests and our fertile fields.

What an easy task to burble blessings for our roaring rivers and thundering cataracts where lies the source of millions of horsepower of electrical energy.

What a joy it is to direct the stranger's eye to our broad, deep, land-locked harbors and to the mighty ships which traffic thereon.

With what gusto can we recite the story of our wealth—potential and otherwise—the latter including eight per cent bonds and first mortgages.

With what glibness can we speak of the precious metals deep in Mother Earth's bosom, awaiting the hand of the intrepid bearded brutes who, in story and song, come down from the mines on pay day.

And then, in the chorus of our song we can sing of the million fish, of the countless prune, of the sunkist orange and of the raisin weighted down with iron.

Verily, friends and fellow boosters, material for boosting purposes lies all about us. It is knee deep to a tall "injun" on stilts.

All we need is a soap box and an audience. And, I am reasonably assured there are thousands of folks in the corn belt who are but waiting to sit at our feet and hear us mouth the pearly words of wisdom.

But, today is the day. Now is the accepted time to begin.

Sound off that "A," Professor. Let's run over the words of:—

"Out where the West begins."

Increasing Man-Power Urged in Weekly Sales Letter

Sales letters sent out to members of sales organizations usually dwell upon the actual ways of increasing the business of the firm and fail to give any particular attention to the human element concerned. In a recent letter sent out by the Apex Electrical Distributing Company, the main topic is that of man-power. It is the avowed purpose of every organization to increase the efficiency of its men and this letter gives an idea of one of the ways in which this may be done.

The letter reads as follows:

"The energy generated by our large turbines, motors and dynamos is reckoned in 'horse-power.' The sales production of any individual organization in the appliance business is directly proportionate to its 'man-power.'

"During 1923 we have set for ourselves the task of doubling our 1922 business. To accomplish this we have adopted the following slogan which we are going to keep before every individual in our organization this year:

"COUNT THAT DAY LOST WHICH HAS NOT PRODUCED INCREASED MAN-POWER.

"If you are a branch manager, retaining your job and expanding your job, depends absolutely on your ability to organize. If your organization is not increasing day by day you are not progressing. If you are a field manager, you cannot possibly advance yourself through individual selling. You must gather about yourself men whom you can teach and thus multiply your own sales by five, ten, fifteen or one hundred.

"But if you are an individual salesman perhaps you have the feeling that you are being paid only to sell appliances and not to interest new salesmen in this business. If you feel that way then re-adjust your thoughts. Remember that the man who never does any more than he is paid to do, remains exactly where he started.

"If man-power is the answer to this business, display your ability to interest other men. If you are sold on the position you have, tell other men about it, and bring them into the organization. If you pursue this method as an individual salesman, you will display to your manager the fact that you have a greater interest in this business than your weekly pay envelope, and will prove your right to a field manager's position very quickly.

"The best way to secure a better job is to train yourself for the position just ahead. Then you will be sure of holding it when you secure it."

Bootleg Electricity

is the quality you get when INCOMPETENT ELECTRICAL ENGINEERS have superintended the wiring and installation of electrical equipment in your home.

When electrical equipment is PROPERLY INSTALLED you can heat, clean and illuminate your home and cook all foods with much less trouble and at as low if not lower cost than by numerous other means of accomplishing the same results.

The Cox Electric Co.

have the necessary knowledge, the best of materials and the electrical mechanics and engineers WHO KNOW HOW.

Phone 565 157 Pacific Ave.

The average person knows what "Bootleg Liquor" does to the person who drinks it and advertisements of this character play upon the fear that is held against this liquor. When everyday commonplace terms that are well known to the public are used in the advertisements of the electrical contractor-dealer the force of the copy is greatly increased.

INDUSTRIAL NEWS

Power Applications Are Acted on by Federal Commission

Two preliminary permits, both covering a period of two years, have been issued by the Federal Power Commission at Washington, D. C., to Thebo, Starr and Anderton, Inc., of San Francisco, for power projects in California. One permit covers a proposed project located on the South Fork of the American River, near Placerville, which contemplates the erection of a dam 290 ft. high that would create a reservoir with a capacity of 500,000 acre-feet. A short conduit will lead from the dam to a power house on the river with an estimated installed capacity of 25,000 hp. The second permit covers a project on the McCloud River, where two dams are proposed and are planned to be located 6 and 9 miles above the mouth of the river. Plans call for the erection of power houses below each dam in which equipment is to be installed to generate 200,000 hp.

The Eureka Hydroelectric Company of Eureka, Mont., has been granted a preliminary permit to last one and one-half years, for a project which is expected to develop about 3,500 hp. on Graves Creek, Lincoln County, Montana. The power is to be used for irrigation pumping and for general utility purposes in the vicinity of Eureka.

The commission has also granted to Mrs. Anna P. Gray a preliminary permit for a period of two years, covering a project to be located on the headwaters of South Colony Creek, in Custer County, Colorado. It is proposed to develop storage on two small headwater lakes and to build three power houses on the creek. It is estimated that 1,080 hp. will be developed for use in mining properties in the vicinity and also for general utility purposes.

The commission granted an extension of time of two years to the Snow Mountain Water & Power Company in which to install additional equipment in its Potter Valley power house and to build a new power house at Scott Dam on South Eel River, in Lake County, California, and extended for one year the period of the preliminary permit issued to R. W. Hawley for power development on Silver Creek in the drainage area of the South Fork of the American River, in order to give Mr. Hawley an opportunity to assemble the data collected and to finance his project.

The commission denied the application of the Targhee Power Company for development on Warm River, in Targhee National Forest, Idaho, on account of failure of the applicants to make satisfactory showing of market for power.

Seven applications for permits or licenses have been received by the commission for projects in the western states. The application covering the greatest development is that of the City of Los Angeles which applies for a preliminary permit to divert Leevining, Rush, Walker and Parker Creeks from the Mono Lake watershed through a tunnel and conduit into the Owens River drainage. It is estimated that the capacity of the Owens Gorge is approximately 40,000 hp. It is proposed to use this additional water in irrigating about 50,000 acres in the vicinity. The estimated cost is $8,000,000. This application is in direct opposition to the application filed by the Nevada-California Power Company.

Municipal Power Sale Measure Before State Law Makers

A spirited fight is being waged in the Legislature at Olympia, Wash., over the proposed measure which will permit municipalities to sell power outside of corporate limits of cities. Several new developments have taken place in the original measure, including a recommendation by Speaker Mark E. Reed of the House that a 5 per cent tax on the gross receipts from all sales of electricity by municipalities, both inside and outside their corporate limits, be imposed, the money to go to the state as the result of power plant development.

Among the advocates of the passage of the power measure, and who spoke on behalf of it, were J. D. Ross, superintendent of the Seattle municipal light department; C. F. Uhden, chief engineer of the Skagit project; E. B. Ellington of the Parkland Power Company, Tacoma; Llewellyn Evans, superintendent of the Tacoma light plants; Ira Davisson, commissioner of light and power, Tacoma. Legal representatives of the Puget Sound Power & Light Company and of the Washington Water Power Company attacked the bill, asserting that the light and power companies are concerned, because the bill "threatens to turn loose on us an unregulated and untaxed competitor."

Directors of the Carson-Truckee (Nev.) Irrigation District have recently approved the power contract granted the Nevada Valleys Power Company by the United States Reclamation Service for a ten-year lease on the Lahontan power plant with the amendment that lower power rates be given to residents of Fallon, Nev., and the Newlands Project district. Under the agreement made by the power company it is to relinquish power rights on the Truckee River near Vista. Farmers have objected to the leasing of the Lahontan plant to the power company.

One State Has Not Ratified Colorado River Compact

All but one of the seven western states interested in the Colorado River pact, have ratified the action taken by the delegates who drew up the agreement. The legislature of Colorado is, at the time of writing, discussing the terms of the pact before accepting it. All of the states concerned must ratify the agreement before it is presented to Congress. The states which have ratified the action of their delegates are: Arizona, California, Nevada, New Mexico, Utah and Wyoming.

The pact provides for the allotment of water from the Colorado River for a period of forty years. The compact stipulates that the upper part of the Colorado River basin deliver to the lower part of the basin a total of 75,000,000 acre-feet of water within ten years. Irrigation is given priority, with power developments having rights superior to navigation interests.

Million-Volt Laboratory Is to Be Completed by March

Construction work on the high voltage laboratory at the California Institute of Technology is progressing rapidly, and it is expected that the building will be completed by the first of March. The laboratory will be used jointly by the Institute and the Southern California Edison Company.

In the laboratory will be installed a million-volt transformer to permit the electrical engineers to obtain high voltages with which they may experiment. The Edison company engineers plan to conduct high voltage and high tension tests in connection with their work in high voltage transmission. Dr. Robert A. Millikan will use the high voltage in his work on the constitution of atoms.

The million-volt transformer is one designed by Professor R. W. Sorensen, of the Institute, and will be in four units. In addition to the transformer there will be Poulsen arc equipment which will be used to obtain high voltages at high frequencies.

Bids were recently opened covering a water wheel of 1,900 hp. and an alternating current generator with accessories, by the city water board of Eugene, Ore. The lowest bid, which will be accepted as soon as details are settled, calls for a Wellman-Seaver-Morgan wheel and a Westinghouse generator. It is planned to install the new unit at the present power house on the Mackenzie River, thereby increasing the plant capacity to 42,000 hp. The city is now purchasing some energy from the Mountain States Power Company. It is hoped to have the new plant running by next winter.

Utility Information Committee Formed in Washington

The Washington Committee on Public Utility Information has been organized and has opened offices in the Henry Building, Seattle, with E. H. Thomas in charge as director. The committee is organized along the lines of similar committees in other states. It represents the electric railways, the electric light and power companies and to a great extent the gas industry of the state.

E. H. Thomas, director, Washington Committee on Public Utility Information

The director, E. H. Thomas, is a newspaper man of 27 years' experience, was former managing editor of the Seattle Post-Intelligencer, and has had eight years' experience in public utility publicity work. In a statement issued by Mr. Thomas he says:

"Our committee exists to furnish accurate information and facts about our business to any citizen or group of citizens. We will prepare and send out weekly to the newspapers information about the various phases of our industry. We do this in the belief that our business with its great widespread service, which touches so very intimately the domestic, social, commercial and industrial life of the people, is a matter of concern to the public.

"The plants and properties of the companies represented by this committee are a large and important factor in the industrial organization of the state. Their aggregate assessed valuation is in excess of $45,000,000, but, unlike other kinds of business, their gross revenues are but a fraction of that figure, less than 40 per cent, being $19,540,000 annually. They pay more than $1,600,000 annually in taxes, have 4,359 persons on their $6,129,000 annual payroll, and serve a total of more than 146,000 light and power customers.

"It is a big, important and vital industry about which the public knows little or nothing. It is the belief of the men in this industry that the public is entitled to know all about the public utilities. Because of this belief this committee has been organized."

To Construct Transmission Line in Montana in Spring

Construction work on the 26-mile transmission line from Sheridan, Mont., to Dillon, Mont., will be started as soon as weather permits, according to officials of the Union Electric Company of Dillon. The line will connect with the high voltage line of the Montana Power Company at Sheridan and will be erected for 66,000-volt operation.

Surveys and other preliminary work for the new line have been completed and plans call for the most modern equipment. The line will cost in the neighborhood of $50,000 and is to be constructed by the Beaverhead Transmission Company, a company not connected with either the Union Electric Company or the Montana Power Company.

Dillon has been supplied by two steam-electric plants of the local power company, and the load has been increased to such a degree that it is necessary for the company to purchase power from some outside source. The high voltage current will be stepped-down in a substation to be erected in the outskirts of the city.

Power Company Will Seek Permit to Exercise Franchise

The application of the Mount Whitney Power & Electric Company for a certificate to exercise franchise rights in Kings County, Calif., will be heard by the California Railroad Commission on Feb. 23. The application of the San Joaquin Light & Power Corporation to transfer its franchise rights in Kings County to the Southern California Edison Company will be heard at the same time.

The Mount Whitney Power & Light Company's distribution system and business was purchased by the Edison company about three years ago. It has now become necessary to apply to the commission for a certificate granting the Mount Whitney company franchise rights in the county where it constructed lines, and which cannot be operated by the Edison company until the Mount Whitney company secures the right to operate them.

Twenty-five-year Service Men Are Honored at Banquet

Three hundred members of the Old Guard, an organization of employees of the Los Angeles Gas & Electric Corporation in Los Angeles, Calif., who have worked for the concern for ten years or more, were banqueted on the night of Feb. 7 as guests of the concern. G. S. Campbell, foreman of the Pasadena shop, was toastmaster; O. W. Twitchell was master of ceremonies, and Paul Overton, general counsel for the corporation, was the speaker of the evening.

W. B. Cline, president, was one of the specially honored guests, he having been with the corporation for thirty years. Some of the others who shared honors were W. M. Van Dyke, director; W. J. Dorr, superintendent of gas distribution; Horace Cline, treasurer. E. R. Northmore, superintendent of the electrical department, was admitted to the thirty-year squad and presented with a handsome pin.

The twenty-five-year men honored were: R. M. Adams and W. A. Cheney, retired; T. P. McCrea, secretary; A. B. Day, general superintendent, and C. A. Bartlett. The new twenty-five-year men admitted and presented with special pins were C. A. Luckenbach, third vice-president, and H. E. Dewey, foreman of the electric shop.

Reclamation Conference Is Held at Salt Lake City

Fourteen reclamation projects in western states, from South Dakota to the Pacific Coast, were represented in a conference of water users and reclamation service officials held at the chamber of commerce at Salt Lake City, January 29 and 30.

The conference was called at the instigation of officials of the Strawberry reclamation project in Utah, with the primary object of securing relief for water users by obtaining from the government an extension of time allowed for making water payments.

The conference was attended by thirty-five representatives of fourteen of the twenty-five projects in the territory which includes the following states: Utah, Texas, New Mexico, Arizona, California, Oregon, Washington, Idaho, Wyoming, Colorado, South Dakota, North Dakota, Nebraska, Montana and Nevada.

A permanent organization was effected, to be known as the Federated Association of United States Reclamation Project Water Users. Lee R. Taylor, of Payson, Utah, president of the Strawberry Valley Irrigation project of Utah, who presided at the conference, was elected chairman of the executive committee of the new organization.

Relief for settlers on government projects who have been unable to meet the costs of construction, maintenance and assessments now due in the form of a 40-year payment plan as provided by the Borah bill now before Congress, is the primary objective of the new association. As the Borah bill may not come before the present session of Congress in time to become a law if passed, the projects which are represented in the new association plan to appeal to the Department of the Interior and Congress for temporary relief pending the passage of the bill. An endorsement of the bill, with a suggestion that if the proposed plan depletes the reclamation fund Congress should provide a fund to the United States Reclamation Service of sufficient amount to continue the development policy, is embodied in the first resolution passed by the conference.

Another resolution claimed equable treatment for pioneers on reclamation projects, to the end that the United States Treasury should bear the general expense of the Reclamation Service of the government, the same as other branches of the government engaged in similar work.

The Columbia Steel Corporation has recently acquired title to 3,120 acres of coal land in Carbon County, Utah, as a preliminary in making effective its program of the development of the iron industry in Utah. The property is said to contain deposits of the finest coking coal in the state.

Duplicate light and power service will be supplied to the Palouse district, in eastern Washington, by the Washington Water Power Company in the near future, when the new line from Lind to Colfax is put in service. The line from Lind east into the Palouse district will be available to supply power should the line south from Spokane fail at any time.

Oregon Power Company Bought by Stone & Webster

The Puget Sound Power & Light Company, of Seattle, a Stone & Webster subsidiary, has purchased the North Coast Power Company, which includes power and electric systems from Tenino, Wash., to Portland, Ore. This purchase, coupled with the purchase, by the company, of the Washington Coast Utilities Company recently, gives the Puget Sound Power & Light Company control of power and electric properties of western Washington, with the exception of the Grays Harbor companies and Seattle and Tacoma municipal properties.

The purchase includes street railway lines, light and power plants at Kelso and Chehalis, the electric line between Chehalis and Centralia; the light and water plants at Tenino and Kalama; the electric railway, light and water plants at Vancouver, Wash., the largest of the company's holdings; electric light and water plants at Hillsboro, Rainier, Beaverton and Forest Grove in Oregon. The company distributes electricity for light and power in all of these places and it is sold wholesale to the Centralia, Wash., municipal plant for light. The Washington Idaho Water, Light & Power Company at Winlock, Wash., purchases energy under a wholesale contract.

The North Coast Power Company operates one steam and one hydroelectric plant, the combined capacity being 2,150 kw., and purchases power from the Portland Railway Light & Power Company, the peak demand from that company being about 1,000 kw. The company, as the Washington Coast Utilities, will continue to operate under the same name and with the same organization as before the purchase.

National Commission Favored to Regulate Broadcasting

With the idea in view of greatly expanding the usefulness of radio telephone broadcasting, H. P. Davis, vice-president of the Westinghouse Electric & Manufacturing Company, has suggested a plan for the establishment of a national broadcasting service.

Mr. Davis thinks that a federal regulating commission should be formed to control broadcasting. This commission, he believes, should be vested with full power and authority to make regulations and enforce them to the full extent of existing laws. It is Mr. Davis' contention that all requests for licenses should come to and be approved by this body, and when an application for a license is approved and the license given, it should take on the nature of a franchise which should be enjoyed by the owner so long as he gives the service required.

Mr. Davis suggests that there must be two classes of broadcasting stations, and these two classes ought to be sufficient. First, there will be stations that are national in scope—broadcasting material of national interest and second, local stations serving particular districts. A plan of this kind can be worked out and would, in his opinion, permit the widest possible use and development of broadcasting. The service of the local stations would allow crystal set reception of distant national stations through the relaying of their programs by the local station. On the other hand, it would not prevent those having suitable receiving sets, selecting programs at will of such of the national stations as they could receive. The privilege of operating a radio receiving set shall be subject to such rules and restrictions as the interstate radio commission, acting in the interest of the public, may find it desirable to enforce, according to Mr. Davis.

The British Columbia Electric Railway Company has let a contract for the construction of the distributing system in the municipality of West Vancouver to Hume & Rumble, of New Westminster, for $40,000. The work calls for the erection of some 800 standard poles and the stringing of about 15 miles of wire. It is expected that the work will be completed in about six weeks' time.

Second Electric Ferry Launched on San Francisco Bay

The second electrically operated ferry boat built for the Golden Gate Ferry Company, of San Francisco, was launched from the Robertson Shipyards at Alameda, Calif., on Feb. 3. The new ferry will be completed as quickly as is possible and the shipbuilding concern will endeavor to have it ready for operation in May.

The boat will be primarily for handling automobiles between San Francisco and Sausalito. The capacity of the new vessel will be eighty cars and when it is put in service the company will be able to maintain a fifteen-minute service on holidays and a thirty-minute schedule on week days.

Miss Elizabeth Klatt, daughter of the secretary-treasurer of the Golden Gate Ferry Company, christened the boat the "Golden West." The "Golden Gate," sister ship of the "Golden West," is the only electrically propelled ferry boat operating on San Francisco Bay at the present time, but the San Francisco Oakland Terminal Railways Company is having two built which should be in service before the end of the year.

California Cooperative Campaign Sets Budget for 1923

Budget requirements for the enlarged program which will be undertaken by the California Electrical Cooperative Campaign during 1923 were outlined at a meeting of the Advisory Committee of that organization held at Del Monte Feb. 7. During the year a total of $50,000 will be expended in California in a concentrated effort to educate the public to a greater per capita use of electricity. At the same time a preliminary budget of $65,000 for the year 1924 was decided upon.

The budget for this year will be guaranteed by contributions of $30,000 from the central station group and $20,000 from the manufacturer, jobber, contractor-dealer group. A new field for contributions has been opened up in the recognition by the campaign of the broadest channels of distribution for electrical appliances. Subscriptions from such retailers will be credited to the central station allotment.

Plans of campaign activities for the coming year include the display of ten electrical homes, construction on four of which is under way at the present time. These four homes will be on display in Long Beach, Fresno, San Francisco and San Diego within the next few months. Five illuminated billboards and other special undertakings along educational lines will be widely distributed over the state. The campaign staff will be enlarged by the addition of six field representatives, two of whom will be women lecturer-demonstrators.

An application has been received by J. P. Martin of Ogden, Utah, district engineer of district four of the Forest Service, from the Nevada Power Company, a subsidiary of the Idaho Power Company, for license to construct a power transmission line through the Humboldt National Forest to supply additional mines in the Jarbidge mining district at Jarbidge, Nev. The application will be referred to the federal power commission at Washington.

Launching of the "Golden West," the second electrical ferry for San Francisco Bay.

Twenty-five Year Service Button Given John B. Miller

In commemoration of twenty-five years' service, a complimentary dinner was given to John B. Miller, president of Southern California Edison Company, by the officials and employees of that company on Feb. 1, at the Hotel Alexandria, Los Angeles. During the evening the twenty-five year service button, the highest in a series given every five years, was bestowed upon

JOHN B. MILLER,
President, Southern California Edison Co.

Mr. Miller, sixteen employees who have achieved the twenty-five year rank serving as guard of honor. In 1898, when Mr. Miller joined the Edison organization, there were only twenty-nine employees and the annual gross earnings were less than $50,000. There are now five thousand employees and the gross revenues exceed $17,000,000 a year. The present vice-president and general manager, R. H. Ballard, was then the only bookkeeper and W. L. Percey, now treasurer, was the cashier when Mr. Miller joined the company.

In the course of the evening complimentary telegrams arrived from Thomas A. Edison, Samuel Insull, president of Commonwealth Edison Company, Chicago; Joseph B. McCall, Philadelphia Electric Company; Frank W. Smith, president National Electric Light Association; Mortimer Fleishhacker, president Great Western Power Company of San Francisco; W. E. Creed and John A. Britton of Pacific Gas & Electric Company, San Francisco; S. Z. Mitchell, president Electric Bond & Share Company, New York; C. L. Edgar, president Edison Electric Illuminating Company of Boston; H. M. Byllesby, president H. M. Byllesby Company, Chicago; Albert Harris, president Harris Trust & Savings Bank, Chicago; E. W. Rollins of E. H. Rollins & Sons, Boston; James H. McGraw of McGraw-Hill Publishing Company, New York; Franklin T. Griffith, president Portland Railway, Light & Power Company, and Daniel E. Pomeroy, Bankers Trust Company of New York.

Brief talks were given by R. H. Ballard, vice-president and general manager; S. H. Kennedy and G. C. Ward, vice-presidents; George I. Cochran and Henry M. Robinson, directors; R. V. Reppy, general counsel; B. F. Pearson, manager of operations, and W. A. Raymaker, field superintendent of construction. These men have been associated with Mr. Miller for many years and the occasion proved as delightful to them as to their president.

The program was concluded by presenting Mr. Miller with a painting entitled "Spring in the Desert," by John M. Gamble, a gift from the officers and men of the Edison company.

Annual Report Is Published by British Columbia League

In the second annual report of the Electrical Service League of British Columbia, which has recently been published, the activities of the league during the last year have been reviewed and plans for the coming year have been outlined. The report includes statements concerning the finances of the league as well as a summation of the activities of the league among the public and its members.

The outlook for the future includes a statement that the object of the league will be the same as at the beginning, namely, educational, but the problems are to some extent changing. The report claims that it will be necessary to devote more time to promoting the electrical idea among the members of the industry as well as among the public.

Los Angeles Railway Will Build Its Own Street Cars

The Los Angeles Railway Company will build its own cars in a shop under construction at the intersection of Fifty-third Street and South Park Avenue. The new shop is to be 433 ft. long and 94 ft. wide, with twenty-one tracks accommodating forty-two cars.

Material for the first cars to be constructed has been ordered and actual work will be started in about three months. Plans call for the construction of a type of car almost the same as that used in the two-car trains on the Grand-Moneta Avenues line and the Western Avenue line.

About five hundred employees of the Denver Gas & Electric Light Company, members of the Doherty Men's fraternity, were present at a banquet given in Denver, Colo., on Feb. 1, to hear the message from Henry L. Doherty, president of the interests which control the Denver company. Clare N. Stannard, general manager of the Denver Gas & Electric Light Company, was the principal speaker and told the men of Mr. Doherty's feelings toward the Colorado companies under his control.

A rehearing was granted by the California Railroad Commission in the application of the Great Western Power Company for an increase of rates, upon petition of the San Francisco-Sacramento Railway Company and the San Francisco-Oakland Terminal Railways. The applicants contended that the recent order of the commission fixing rates for the Great Western Power Company is prejudicial to their rights and interests. The hearing will be held Feb. 21.

Will Increase Capacity of Snake River Generating Plant

That it may be prepared to handle the increased load which will fall on the power house on the east side of the Snake River at American Falls, Idaho, should the company turn the other two plants over to the Reclamation Service, the Idaho Power Company is starting the enlargement of the east side plant. New generating equipment will be added which will increase the capacity of the east side unit by 16,000 hp.

The Reclamation Service is considering the erection of a large dam to provide a reservoir for irrigation purposes and should this dam be placed the power houses in the middle and on the west side of the river will have to be turned over to the Reclamation Service engineers. The power company is preparing to stand the additional load which will fall on the east side plant by installing the two 9,000-hp. turbines and two 8,000-hp. generators.

Provisions for housing the men who will work on the addition have already been made and actual construction should commence in the near future. Between 75 and 150 men will be employed on the job that it may be completed as quickly as possible.

Bids on New Building Accepted by Fresno Corporation

Bids for the new ten-story office building to be erected for the San Joaquin Light & Power Corporation at Fresno, Calif., have been approved and adopted by the directors of the company. The building will house all of the offices of the company.

The successful bidders are: reinforcing steel, Kyle & Company, Fresno; structural steel, Pacific Rolling Mills, San Francisco; glass and glazing, Tyre Brothers, Fresno; millwork, Fresno Planing Mill, Fresno; plaster, MacGruer & Simpson, San Francisco; plumbing, Luppen & Hawley, Sacramento; marble, Hilgarten Marble Company, Los Angeles; tile, Fresno Marble & Tile Company, Fresno; sheet metal, Standard Sheet Metal Works, Fresno; composition roofing, Valley Lumber Company, Fresno; tile roofing, C. E. McMullen, Fresno; painting, Joseph Streeter, Fresno; sprinklers, Pacific Fire Extinguisher Co., San Francisco; cement, Riverside Portland Cement Co., Riverside; metal windows, U. S. Metal Products, San Francisco.

An additional appropriation of $300,000 was also voted by the directors for the installation of industrial yards at Orange and California Avenues in Fresno. The yards will occupy a tract of sixty-three acres adjoining the Sanger branch of the Southern Pacific. The immediate construction program calls for a transformer warehouse, a salvage warehouse, general store rooms, meter testing and transformer testing departments, a pole treating plant, a dipping plant and a crossarm mill.

The budget for the year includes an item for $350,000, for the additions and betterments to the water system of Fresno. New pipe will be laid in many places, and the company will endeavor to get city blocks to cooperate in installing sprinkler systems, as by placing the systems in full blocks the work can be done cheaper.

Meetings

Reflections from the N.E.L.A. Denver Sections Meeting

Four ladies were in attendance—Mrs. O. R. Hogue and Mrs. F. R. Jenkins of Chicago, Mrs. William E. Clement of New Orleans and Mrs. O. H. Caldwell of New York City. They were entertained by Mrs. R. G. Gentry, wife of the commercial manager of the central station in Denver.

C. E. Greenwood of the Edison Electric Illuminating Company of Boston, W. R. Powers of the Consolidated Light, Heat & Power Company of Huntington, W. Va., and A. M. Frost of the San Joaquin Light & Power Corporation of Fresno, Calif., were on the sick list during the sessions.

The personnel of the committee which arranged the meetings and entertainment was as follows: V. L. Board, general superintendent, Harry Hughes, treasurer, and F. F. McCammon, power sales engineer, all of the Denver Gas & Electric Light Company; G. E. Lewis of the Rocky Mountain Committee on Public Utility Information; and S. W. Bishop, executive manager of the Electrical Cooperative League in Denver.

California cheer was dispensed at the banquet by A. M. Frost of Fresno and D. C. Ray and H. E. Sandoval of the Pacific Gas & Electric Company, San Francisco, in the form of raisins in little individual packages.

L. M. Cargo, Rocky Mountain manager for the Westinghouse Electric & Manufacturing Company, was host to about twenty of the visitors at a dinner at the Metropole Hotel preceding the Harry Lauder theater party.

The wide out-of-doors of the West appealed strongly to G. Bertram Regar, chairman of the lighting sales bureau and a native of Philadelphia. It was his first trip West and as a result Colorado has another booster.

Clare N. Stannard, vice-president and general manager of the Denver Gas & Electric Light Company, and one of the leaders in the movement to place the commercial section meeting in Denver and who sponsored the entertainment program provided for the visitors, could not be present because of a detention in New York where he had been called in conference with Henry L. Doherty.

George F. Oxley, director of publicity for the N.E.L.A., was in Denver at the time of the meetings but the old home town looked too good to George to let a little business stand in the way. Besides, George said he was on a vacation.

A. W. Childs of the Southern California Edison Company addressed the Denver Electrical Cooperative League meeting Jan. 24, when all the N.E.L.A. visitors were guests.

Several people asked if the banquet Jan. 25 was a Westinghouse convention. Maybe it was, for there were somewhere between twenty and thirty of the company men in attendance most of the time.

Registration at the N.E.L.A Section Meetings in Denver, Colo., Jan. 24-26

Addie, C. E., Denver Gas & Electric Light Co., Denver, Colo.
Adler, Harry, Arapahoe Electric Light & Power Co., Denver, Colo.
Anderson, A. S., General Electric Co., Denver, Colo.

Ball, E. B., Western Light & Power Co., Boulder, Colo.
Baylor, A. K., General Electric Co., New York City
Berry, A. F., U. S. Electric Light & Power Co., New York City
Bigler, C. A., Denver Gas & Electric Light Co., Denver, Colo.
Bleak, R. M., Utah Power & Light Co., Salt Lake City
Bridger, L. J., Westinghouse Electric & Manufacturing Co., Denver, Colo.
Brierley, G. Cecil, Western Light & Power Co., Boulder, Colo.
Byrne, W. S., Nebraska Power Co., Omaha, Neb.

Caldwell, O. H., "Electrical Merchandising," New York City
Chase, Samuel Adams, Westinghouse Electric & Manufacturing Co., New York City
Childs, A. W., Southern California Edison Co., Los Angeles, Cal.
Clark, R. W., Puget Sound Light & Power Co., Seattle, Wash.
Clement, Wm. E., New Orleans Public Service Co., New Orleans
Cody, L. W., Western Light & Power Co., Boulder, Colo.
Coe, E. H., Colorado Power Co., Denver, Colo.
Cooper, John J., Mountain Electric Co., Denver, Colo.
Coxe, J. R., N. Y. & Queens Electric Light & Power Co., Long Island City
Crites, O. E., Southern Colorado Power Co., Pueblo, Colo.
Crowe, J. J., Automatic Electric Washer Co., Newton, Iowa
Cummings, C. A., Duncan Electric Manufacturing Co., Lafayette, Ind.

Dostal, J. F., Colorado Springs Light, Heat & Power Co., Colorado Springs, Colo.
Douden, P. A., Western Electric Co., Denver, Colo.
Dunten, C. O., Central Illinois Public Service Co., Springfield, Ill.

Edkins, E. A., Commonwealth Edison Co., Chicago

Fagan, Walter, Chicago Flexible Shaft Co., Chicago
Fitzsimons, T. E., Westinghouse Electric & Manufacturing Co., Denver, Colo.
Frazier, E. H., Delco-Light Co., Denver, Colo.
Frost, A. M., San Joaquin Light & Power Corp., Fresno

Gavette, E. L., Western Light & Power Co., Loveland, Colo.
Gentry, R. G., Denver Gas & Electric Light Co., Denver, Colo.
Goldman, A., New York Edison Co., New York City
Goodwin, William L., Society for Electrical Development, New York City
Greenwood, C. E., Edison Illuminating Co., Boston
Groo, Jay S., Northwestern Electric Co., Portland, Ore.

Hale, R. S., Boston Edison Electric Co., Boston
Harvey, J. L., Kansas Gas & Electric Co., Wichita, Kans.
Heston, Walter C., "Electrical World," San Francisco
Hodgson, G. O., General Electric Co., Denver, Colo.
Hogue, O. R., Commonwealth Edison Co., Chicago
Hughes, George A., Edison Electric Appliance Co., Chicago

Jenkins, Fred R., Commonwealth Edison Co., Chicago
Jacobs, E. R., Simplex Electric Heating Co., Chicago

Kennedy, Thomas F., Doherty Co., New York City
Kirk, J. J., Commonwealth Edison Co., Chicago
Kirk, O. G., Home Gas & Electric Co., Greeley, Colo.

Lane, H. A., National Electric Light Association, New York City
Lanning, M. E., Westinghouse Electric & Manufacturing Co., Denver, Colo.
Laufenburg, W. J., Western Electric Co., Denver, Colo.
Lester, Bernard, Westinghouse Electric & Manufacturing Co., East Pittsburgh
Looney, J. E., Home Gas & Electric Co., Greeley, Colo.
Lufkin, J. L., U. S. Electric Light & Power Co., New York City
Luscomb, H. T., New York Edison Co., New York City

McCammon, F. F., Denver Gas & Electric Light Co., Denver, Colo.
McGrath, Thomas, Arapahoe Electric Light & Power Co., Littleton, Colo.
Meese, Horace S., Commercial Truck Co., Philadelphia
Meyer, H. W., N. W. States Power Co., Minneapolis
Miller, G. E., Cleveland Illuminating Co., Cleveland, Ohio
Milliken, E. L., Stone & Webster, Woonsocket, R. I.
Morrow, M. C., Westinghouse Electric & Manufacturing Co., New York City
Moser, W. A., Westinghouse Electric & Manufacturing Co., Salt Lake City

Nichols, C. K., New York Edison Co., New York City
Norcross, Fred, Home Gas & Electric Co., Greeley, Colo.

Orr, J. F., Idaho Power Co., Boise, Idaho

Pembleton, F. D., Public Service Co., Newark, N. J.
Power, W. R., Consolidated Light, Heat & Power Co., Huntington, W. Va.
Pragst, Ernest, General Electric Co., Schenectady
Putnam, W. R., Idaho Power Co., Boise, Idaho

Quinn, John F., Colorado Power Co., Denver, Colo.

Randall, H. D., General Electric Co., Denver, Colo.
Ray, D. C., Pacific Gas & Electric Co., San Francisco
Reagan, H. C., Western Light & Power Co., Boulder, Colo.
Regar, G. Bertram, Philadelphia Electric Co., Philadelphia
Roche, J. F., Edison Electric Appliance Co., Chicago
Rowland, E. M., Western Light & Power Co., Boulder, Colo.
Rowley, B. E., Edison Electric Appliance Co., Salt Lake City

Sanborn, R. P., Edison Storage Battery Co., Orange, N. J.
Sandoval, H. E., Pacific Gas & Electric Co., San Francisco
Semrad, C. A., Western Light & Power Co., Boulder, Colo.
Skinner, Charles R., Jr., New York Edison Co., New York City
Spake, L. C., Electric Light & Power Co., Chicago
Sprunt, Jr., J. P., Westinghouse Electric & Manufacturing Co., Denver, Colo.
Stearns, J. W., Mountain Electric Co., Denver, Colo.
Stone, E. F., Southern Colorado Power Co., Pueblo, Colo.
Storey, L. R., Home Gas & Electric Co., Greeley, Colo.
Strange, John V., Pacific Power & Light Co., Portland, Ore.

Tallman, Vernon M. F., Chas. H. Tenney & Co., Boston
Thomas, G. W., Western Light & Power Co., Boulder, Colo.

Vogler, Frank J., Colorado Springs Light, Heat & Power Co., Colorado Springs

Walker, H. S., Westinghouse Electric & Manufacturing Co., Denver, Colo.
Wilcox, N. T., Mississippi River Power Co., Keokuk, Iowa
Wright, Harold, Commonwealth Edison Co., Chicago

Pacific Coast Supply Jobbers Hold Quarterly Meeting

The quarterly meeting of the Pacific Division of the national Electric Supply Jobbers' Association, held at Del Monte, Calif., Feb. 8-10, was the largest meeting which the records of the association show. The meetings, which were in charge of Chairman C. E Wiggin, were well attended and were productive of much interesting discussion. With the exception of three members of the association, every firm was represented. Aside from the jobbers, an unusually large registration of manufacturers and representatives of other electrical interests were in attendance.

N. W. Graham, of the Graham Reynolds Electric Company, of Los Angeles, was elected chairman of the division and A. H. Elliot was re-elected secretary. E. G. Alexander, of Alexander & Lavenson, Los Angeles, was elected as the new delegate to the executive committee of the Pacific Coast Division. During the entire time that the convention was in session, Thomas M. Debevoise, general counsel of the association, was in attendance.

The open meeting of Feb. 10 was in charge of E. O. Shreve, San Francisco manager of the General Electric Company, and proved to be one of the most interesting and instructive meetings ever held by the association. The first speaker, R. A. Balzari, Westinghouse Electric & Manufacturing Company, chose as his subject "Business Courtesy," and impressed upon his audience the necessity of the proper observance of courteous practices in dealing with the public.

W. R. Alberger, vice-president and general manager, San Francisco-Oakland Terminal Railways, addressed the meeting on the problems of the electric railway business. Mr. Alberger chose as an example for his talk, the operation of the company of which he is executive head.

The principal discussion of the meeting centered around a chart designed and presented by E. O. Shreve, describing a proposed co-ordination of the different electrical clubs, leagues and societies to promote a greater solidarity of interest in the mutual problems of public utilities, with particular reference to their bearing upon the electrical industry.

Much enthusiasm was displayed in connection with the golf tournaments which are a regular feature of the quarterly meetings. An innovation in the form of a "Calcutta Pool" was introduced, whereby the contestants were auctioned off. Ten prizes were awarded for those making the lowest net score in two days' play, prizes going to purchasers of the winning players. In the contest for the cups, which are also regularly awarded, C. B. Hall, Illinois Electric Company, Los Angeles, was successful in winning both the Turner trophy and the "Old Copper Cup" for the lowest net score. The Deming trophy was won by George A. Boring, district manager, Pacific States Electric Company, Portland. The winners of the Calcutta Pool and their purchasers were as follows:

First place, H. L. Garbutt, Westinghouse Electric & Manufacturing Company, San Francisco, owned by T. E. Bibbins, Pacific States Electric Company, San Francisco; second place, C. P. Bach, Manhattan Electrical Supply Company, San Francisco, owned by F. N. Averill, Fobes Supply Company, Portland, Ore.; third place, C. M. Will, Fobes Supply Company, Portland, Ore., owned by F. N. Averill; C. B. Hall, Illinois Electric Company, Los Angeles, Calif., and N. S. Gallison, Journal of Electricity and Western Industry, San Francisco, tied for fourth place, their respective owners, F. J. Airey, Pacific States Electric Company, Los Angeles, and D. E. Harris, Pacific States Electric Company, San Francisco, matched for the position and as a result Mr. Hall's owner received the fourth prize; sixth place was won by G. A. Boring, Pacific States Electric Company, Portland, owned by T. E. Bibbins; seventh place went to C. C. Hillis, Electric Appliance Company, San Francisco, owned first by P. E. Booth, Edison Electric Appliance Company, Ontario, Calif., but sold to Mrs. C. C. Hillis. H. W. Turner, Montana Electric Company, Butte, Mont., owned by W. S. Berry, Western Electric Company, San Francisco, won eighth place; W. S. Berry, owned by E. G. Alexander, Alexander & Lavenson Company, Los Angeles, J. I. Colwell, Western Electric Company, Seattle, Wash., owned by P. E. Booth, and Garnett Young, Garnett Young & Company, San Francisco, owned by Miles F. Steel, Benjamin Electric Company, San Francisco, tied for ninth place.

The following were in attendance at the golf dinner, which was the final event of the three-day session:

P. J. Aaron, N. Abrams, F. J. Airey, W. R. Alberger, E. G. Alexander, H. W. Allen, R. M. Alvord, S. B. Anderson, F. N. Averill, C. P. Bach, George Bailey, R. A. Balzari, H. L. Bargion, J. D. Barnhill, F. Beck, W. S. Berry, T. E. Bibbins, G. A. Boring, J. L. Busey, A. J. Calloway, J. O. Case, S. A. Chase, J. I. Colwell, H. H. Daley, L. W. Davis, A. H. Elliot, C. W. Fritz, N. S. Gallison, H. L. Garbutt, Eugene Garcia, F. A. Gearhart, C. W. Goodwin, G. A. Gray, W. S. Greenfield, S. B. Gregory, C. B. Hall, D. E. Harris, C. B. Hawley, W. C. Heston, C. C. Hillis, G. E. Hillis, E. E. Himmel, Ben Holst, R. J. Holterman, J. Kahn, James Kearney, J. L. Kline, A. Kohn, J. H. Lavenson, C. E. Listenwalter, August Lutz, W. D. McDonald, E. P. Markee, H. J. Martin, A. R. Miller, H. R. Noack, R. F. Oakes, S. W. Peterson, J. G. Pomeroy, H. F. Rea, C. D. Russell, H. E. Sanderson, W. B. Sawyer, E. O. Shreve, M. F. Steel, H. B. Squires, C. E. Thompson, F. C. Todt, H. W. Turner, C. E. Wiggin, C. M. Will, Roy Worth, and Garnett Young.

COMING EVENTS

American Society of Mechanical Engineers—
Pac. Coast Regional Meeting—Los Angeles, Calif.
Apr. 16-18, 1923

National Electric Light Association—
Annual Convention—New York, N. Y.
June 4-8, 1923

Pacific Coast Electrical Association—
Annual Convention—San Francisco, Calif.
June 19-22, 1923

American Institute of Electrical Engineers—
Pacific Coast Convention—Del Monte, Calif.
Sept. 26-29, 1923

Engineers Completing Plans for Pacific Coast Meeting

Preliminary plans for the Pacific Coast convention of the American Institute of Electrical Engineers have recently been rounded into nearly definite shape. The convention is to be held at Del Monte, Calif., Sept. 26-29.

One of the most important things to be done will be the presenting of the Edison Medal to Dr. Robert A. Millikan. Symposiums of nine technical papers will be presented at the three morning sessions of the convention and opportunities will be given the visiting engineers to discuss problems of the electrical industry.

Afternoons will be devoted entirely to recreation. A special train will leave Del Monte the last day of the convention, which will take the engineers to visit the Hetch Hetchy project of the City of San Francisco.

San Francisco Electrical League Elects New Officers

Louis F. Leurey, consulting electrical engineer of San Francisco, was elected president of the San Francisco Electrical Development League at the annual election meeting held Feb. 12. During the past year Mr. Leurey has been chairman of the entertainment committee.

The present secretary-treasurer, J. W. Mahoney, of the General Electric Company in that city, was re-elected by the members of the league. A. U. Brandt, electrical engineer, San Francisco division of the Pacific Gas & Electric Company; D. I. Cone, protection engineer of the Pacific Telephone & Telegraph Company, San Francisco; and C. Todt, Pacific States Electric Company, were named as the new members of the executive committee of the electrical association.

Electrical Men Discuss Future Growth of Industry

Samuel Adams Chase, special representative of the merchandising department of the Westinghouse Electric & Manufacturing Company of New York City, was the guest of the electrical fraternity of Salt Lake City, Wash., at their monthly meeting on the evening of Jan. 30. This meeting was one of the first of a series of monthly meetings to be held by the electrical interests, under the auspices of the Rocky Mountain Electrical Cooperative League.

Mr. Chase, in a very interesting talk, produced some figures showing the past growth and future prospective growth of the electrical industry, and the very large field that has hardly been touched in the electrical merchandising division. Mr. Chase is an ardent supporter of the electrical cooperative idea, and is doing excellent work in bringing a closer association among all branches of the industry.

Lafayette Hanchett, president of the Utah Power & Light Company, also spoke on the subject of the future of the electrical pump on the farm. Mr. Hanchett presented some exceedingly interesting data.

The subject of better lighting was covered in a very able manner by Mr. Mills, western representative of the National X-Ray Reflector Company.

Personals

Charles P. Dunn, formerly connected with the City of Seattle's Skagit development in the capacity of hydraulic and structural designer, has become head of the drafting department of the Port-

CHARLES P. DUNN

land Railway, Light & Power Company. Mr. Dunn received his early training at Washington State College, and for the ten years prior to his connection with the City of Seattle, he was associated with the western district of the Great Northern Railway. His time was spent largely in connection with the hydro-electric development involved in the electrification of the Cascade tunnel. During the period of the war Mr. Dunn was employed by the Skinner and Eddy Corporation of Seattle in charge of hull design. His new work in Portland will deal principally with the construction of the 30,000-kva. Oak Grove development.

A. J. Calloway, manager of the Western Electric Company, **J. A. Kahn,** Capitol Electric Company, and **C. B. Hawley,** Intermountain Electric Company, were the Salt Lake delegates to the jobbers' meetings at Del Monte. Mr. Kahn was toastmaster at the golf dinner.

H. L. Bargion, H. W. Turner and **J. L. Busey** of the Montana Electric Supply Company, Butte, were the Montana delegates to the recent Del Monte jobbers' meetings.

Harry C. Goldrick, who for a number of years has been manager of the Syracuse office of the Western Electric Company, has been transferred to the Los Angeles office to take charge of the electric household appliance department. Mr. Goldrick, who was formerly located on the Pacific Coast, will take up his new duties immediately.

W. W. Campbell, director of the Lick Observatory and a scientist of note, has been appointed to the presidency of the University of California by the Board of Regents of that institution. Dr. Campbell is a noted astronomist and has been connected with the University since 1891. He is a graduate of the University of Michigan with a degree in civil engineering.

Harry L. Harper, manager of the Western Electric Company, **K. E. Van Kuran,** manager of the Westinghouse Electric & Manufacturing Company, and **J. O. Case,** manager of the General Electric Company, were among the Los Angeles electrical men to attend the recent Del Monte convention of the Pacific Coast division of the National Electrical Supply Jobbers' Association. Others included in the Los Angeles delegation to the convention were **H. W. Allen,** sales manager, Graham-Reynolds Electric Company; **J. L. Kline,** president, Western Light & Fixture Company; **Frank J. Airey,** manager, Pacific States Electric Company; **C. E. Listenwalter,** Listenwalter & Gough; **C. B. Hall,** president, Illinois Electric Company; **E. P. Markee,** district manager, Edison Lamp Works of the General Electric Company; **L. W. Davis, manager,** Westinghouse Lamp Company; **J. G. Pomeroy,** district representative, Rome Wire Company;**P. H. Booth,** manager, Edison Electric Appliance Company, and **J. H. Jamison,** manager, merchandising department, Westinghouse Electric & Manufacturing Company.

Samuel A. Chase, special representative of the merchandising department of the Westinghouse Electric & Manufacturing Company with offices in New York, is making a tour of the West in the interests of his company. Mr. Chase attended the meetings of the commercial national section of the N.E.L.A. in Denver and later addressed a meeting of the Rocky Mountain Electrical Co-operative League. He also attended the Del Monte meeting of the Pacific Coast division of the National Electrical Supply Jobbers' Association. Mr. Chase is one of the best known figures in the electrical industry in the country and one of the foremost authorities on merchandising problems.

George Bailey, of the Westinghouse Commercial Investment Company, New York City, recently completed a tour of the Pacific Coast. Mr. Bailey also attended the quarterly meeting of the Pacific Coast division of the National Electrical Supply Jobbers' Association at Del Monte.

J. I. Colwell, manager of the Seattle office of the Western Electric Company, **Roy Worth,** district manager, and **C. D. Russell,** sales manager, Pacific States Electric Company, Seattle, **P. J. Aaron,** manager, Fobes Supply Company, Seattle, **W. D. McDonald,** district manager, Westinghouse Electric & Manufacturing Company, Seattle, **H. J. Martin,** National Carbon Company, Seattle, **George Boring,** manager, Pacific States Electric Company, Portland, **C. M. Will,** manager, Fobes Supply Company, Portland, and **S. W. Peterson,** Stubbs Electric Company, Portland, were among the men from the Northwest who attended the recent meeting of the Pacific Coast division of the National Electric Supply Jobbers' Association at Del Monte. Mr. Boring was the winner of the Deming trophy in the golf tournament which is a regular feature of the meetings.

Ira Osborn Baker, professor of civil engineering, emeritus, University of Illinois, was the guest of honor of the San Francisco Engineers' Club on Feb. 2, 1923. He addressed the members of the organization on "The Future Status of Engineers."

Kenneth A. McIntyre, of the staff of the Society for Electrical Development, will spend Feb. 12-14 in Denver where he will speak before a meeting of members of the electrical industry. The visit is in connection with a trip which Mr. McIntyre is making through the Middle West.

L. J. Moore, executive engineer of the San Joaquin Light & Power Corporation, is in New York attending the sessions of the technical section of the National Electric Light Association. Mr. Moore will remain in the East about a month and will visit the factories of various electrical manufacturers before returning to his headquarters in Fresno.

W. E. Sprackling, general manager of the Tubular Woven Fabric Company, Pawtuckett, R. I., is a recent Pacific Pacific Coast visitor.

A. M. Frost, manager of sales of the San Joaquin Light & Power Corporation, and **C. C. Courtright,** manager of the Valley Electric Supply Company of Fresno, attended the meetings of the commercial section of the National Electric Light Association in Denver during the latter part of January.

Ray Y. Muffley, for many years light and power superintendent of the Puget Sound Light & Power Company at Bellingham, Wash., has been named general manager of the Washington Coast Utilities branch of the company with headquarters in Seattle. The properties of the Washington Coast Utilities were recently taken over by the Puget Sound company.

G. C. LaMarsna, electrical superintendent of the Honolulu Consolidated Oil Company of Taft, is a Los Angeles visitor.

Burton R. Stare, of the Burton R. Stare Electric Company, Seattle, is one of the most active members of the Electric Club of Seattle engaged in arranging for the Electrical Show which is to be staged in that city within the next two or three months. The Elec-

BURTON R. STARE

tric Club, which recently displayed two highly successful electric homes, is sponsoring the exposition. Dealers, jobbers and manufacturers are co-operating to make the coming show a success. During the electric home display, Mr. Stare acted as general chairman for the homes, supervising the exhibition of both the Mt. Baker and the North Broadway model houses.

R. M. Bleak of the Utah Light & Power Company has been re-elected secretary-treasurer of the Rocky Mountain Electrical Cooperative League for the coming year. Mr. Bleak has charge of the lighting and appliance sales of that company and has been a member of the commercial department for the past seven years. He is an enthusiastic supporter of the principles of the Cooperative League and has been one of its most active members since the inception of the organization. He is an active worker for cooperation among the various branches of the electrical industry.

R. M. BLEAK

Chas. E. Johnson, district illuminating engineer, Westinghouse Electric and Manufacturing Company of Los Angeles, is now in the East visiting the Geo. Cutter Works of the Westinghouse Company at South Bend, and the Westinghouse Lamp Works at East Orange, New Jersey.

F. N. Averill, president of the Fobes Supply Company, of Portland, was one of the Northwestern representatives at the recent Del Monte meeting of the Pacific Coast section of the National Electrical Supply Jobbers' Association.

R. R. Wyker of the Los Angeles office of the Pacific States Electric Company, has been made resident agent for Arizona for the company with headquarters in Phoenix.

Franklin T. Griffith, president of the Portland Railway, Light & Power Company, has been named a member of the general publicity committee of the American Electric Railway Association. **W. P. Strandborg,** publicity agent of the same company, has been reappointed to the sub-committee on publicity which is in charge of the district made up of Oregon, Washington, Idaho, Montana, Wyoming, North and South Dakota.

Stanley Walton, for thirteen years a member of the commercial department of the Pacific Gas & Electric Company, and until recently sales manager of the gas and electric departments, has resigned to become sales manager of the Bonestell Paper Company, one of the pioneer firms in the paper business in San Francisco. Mr. Walton was a member of the class of 1904 of the University of California.

Arthur Prager, manager of the Albuquerque (N. M.) Gas & Electric Company, has been elected president of the Albuquerque Chamber of Commerce.

A. Strauch, formerly electric heating specialist for the Pacific Gas & Electric Company, has opened offices in the Rialto Bldg., San Francisco, as an electric heating engineer. Mr. Strauch is prepared to submit estimates and furnish apparatus for domestic and industrial electric heating, cooking and refrigeration. Mr. Strauch was in charge of the development of electric heating and cooking for the Pacific Gas & Electric Company for eight years.

K. W. Kissick, for the past two and a half years with the Sheridan County Electric Company as chief engineer, has been appointed manager of the Deming Ice & Electric Company of Deming, N. M. Mr. Kissick succeeds **R. E. Thompson,** who resigned to become manager of the Springfield (Mo.) Gas & Electric Company.

Jack Fiester, formerly with the Idaho Power Company at Pocatello, has joined the Salt Lake City office of the Edison Electric Appliance Company as range sales specialist.

J. L. Stannard, of San Francisco, has been named chief engineer for the construction of the first unit of the City of Tacoma's new $5,000,000 Lake Cushman power project. Mr. Stannard is familiar with the Lake Cushman power project, having in 1917 prepared complete plans and estimates for the development, at the time when the City of Seattle called for bids on the Lake Cushman project, before the Skagit power project had been undertaken.

J. Fischer, veteran electrical engineer and contractor, was elected president of the Denver Association of Electrical Contractors and Dealers at the annual election held by that organization Jan. 23. **E. A. Scott** was chosen vice-president and **H. Alex Hibbard,** a Denver manufacturer's representative, as secretary and treasurer. All three officers are members of the advisory board of the Electrical Cooperative League in that city. Chairmen of the various divisions were appointed as follows: fixtures, **Charles N. Shannon;** wiring, **P. Harry Byrne;** motors, **Basil Swank;** and appliances, **Henry Cahn.** The entertainment committee consisting of **J. W. Hancock,** chairman, **Theodore Nollenberger,** and **W. J. Keating,** was reappointed. **Clarence Keeler** of the Denver Gas & Electric Light Company was the retiring president.

S. Barfoed, chief engineer for **F. G. Baum,** consulting hydroelectric engineer, is in Europe on a short trip home. He will also visit some of the larger hydroelectric developments in Europe before returning to the U. S. A.

Frederick S. Mills, Pacific Coast representative of the National X-Ray Reflector Company, has returned to his headquarters in Los Angeles following a trip to Salt Lake City where he addressed a meeting of the Rocky Mountain Electrical Cooperative League on the subject of "Electrical Engineering."

R. F. Walter and **James Munn** of the United States Reclamation Service with offices in Denver, were two of the principal speakers at the Western Reclamation Conference held in Salt Lake City.

A. W. Berresford, vice-president and director of the Cutler-Hammer Manufacturing Company, has resigned to devote his entire time to private interests. Arrangements have been made whereby his services will be available to the company on specific matters.

George W. Saathoff, construction engineer for the Cities Service Company, which operates the Denver Gas & Electric Light Company, recently arrived in Boulder, Colo., from New York, to inspect the site for the $4,000,000 steam plant which the Denver utility is planning to erect in that city.

H. C. George, oil recovery engineer of the U. S. Bureau of Mines, headquartered at the San Francisco office of the Bureau, returned to San Francisco Jan. 16 from an extended eastern trip gathering information for the preparation of a bulletin on oil pumping methods.

Ralf R. Woolley, hydraulic engineer of the United States Geological Survey, has just returned to his Salt Lake office from Denver, where he conferred with officials of the reclamation service on questions relative to Colorado and Green River reclamation and irrigation projects. While in Denver Mr. Wolley delivered an illustrated lecture on his trip down the Green River last summer with geologists and representatives of the Utah Power & Light Company. The lecture was held under the auspices of the Colorado chapter of the American Society of Civil Engineers. Allied engineering interests were also present.

Judge E. E. Corfman, of Salt Lake City, has been appointed by Governor Mabey as a member of the public utilities commission of Utah, to fill the vacancy caused by the recent death of **Judge A. R. Heywood.** Judge Corfman has been a prominent member of the legal profession in Utah for many years, and for the past six years was chief justice of the Utah Supreme Court. Judge Corfman's term will cover a period of four years.

A. L. Spring, former field representative of the California Electrical Cooperative Campaign in southern California, has joined the staff of the General Electric Company in Los Angeles as merchandising specialist. Prior to joining the Cooperative Campaign, Mr. Spring was sales manager in the Los Angeles office of the Western Electric Company. Mr. Spring has been field representative of the campaign since its inception and was, in point of service at the time of his resignation, the oldest member of the staff. He has been one of the most active figures in the promulgation of the ideals of the campaign throughout the territory in which he worked. He has gained a most extensive acquaintance while in the employ of the campaign, which should aid him in his future work.

A. L. SPRING

Manufacturer, Dealer and Jobber Activities

The P. A. Geier Company of Cleveland, Ohio, has recently announced an advertising and merchandising campaign continuing its policy, began last fall, of working with specific data rather than generalities. The February issue of its house organ, Royal Breezes, reveals this plan in full. Advertisements in national publications will contain facts about the disease dangers of embedded dirt, and the work of dealers and salesmen will be directed along the same line.

The Edison Electric Appliance Company and the **Denver Gas & Electric Light Company** conducted a novel display in the windows of the Denver company during the industrial exposition in that city. A. R. Wooley of the Edison company demonstrated how the Hotpoint iron was assembled and packed for shipping for individual customers. Over 500 irons were made up from the individual parts during the week.

The Walker & Pratt Manufacturing Company has recently placed John F. Senior as its western representative, with offices in Omaha, Neb. Arrangements are also being made to secure distributors, in the larger western cities, for the line of ranges and industrial heating equipment manufactured by the company.

The California Wire Company, of Orange, Calif., has recently received the order for the largest electrical cable manufactured by it so far. The Los Angeles Railway Company is the purchaser of the cable, which will be used on the Los Angeles railroad system. The cable will be one and one-half in. in diameter and will weigh three and one-half lb. per foot.

The Coldak Company, Springfield, Mass., manufacturers of the Coldak home refrigerating machine, has recently prepared for distribution a booklet describing the machine. Complete details concerning the operation of the machine and its adaptability to the home are contained in the booklet.

The Standard Conveyor Company, of North St. Paul, Minn., has recently purchased the rights, titles and patents of the Brown Portable Conveying Machinery Company's line. The Brown Portable line includes sectional piling, elevating, conveying, loading and unloading machinery for handling packed and loose materials. The company can now be reached by addressing mail to the Standard Conveyor Company, Brown Portable Products Plant, North Chicago, Ill.

The Sprague Electric Works of the General Electric Company, New York City, has recently started upon an educational campaign to establish the BX trade mark of the company's line of armored cable. An orange and blue tag will be attached to every coil of cable and the trade mark BX will be imprinted on the cable at 6-in. intervals.

The Electric Power Equipment Corporation of Philadelphia, Pa., has recently signed a contract with the firm of Eicher & Bratt, of Seattle, Wash., naming the company as representatives of the manufacturing corporation in the states of Washington and Oregon. The Seattle agents are also handling the lines of the Kelman Electric & Manufacturing Company; Pittsburgh Transformer Company; Pittsburgh Electric Furnace Corporation, and the Jewell Electric Instrument Company.

The John Hancock Electrical Company, of Denver, has recently acquired new shop facilities. Development of Columbalite lighting unit business has necessitated the expansion. Only the retail store and display room have been left at the Welton Street location, all other departments having been moved to a two-story building at 1412 Wazee Street. The spraying department has been doubled and as soon as additional equipment is received it is understood that an electro-plating department will be started.

The Combustion Utilities Corporation, of Toledo, Ohio, has temporarily attached C. B. Phillips to the commercial department staff of the Denver Gas & Electric Light Company. The assignment is made in the interests of larger fuel contracts.

The Mine & Smelter Supply Company held its annual convention of sales representatives in Denver early in January and the feature of the meeting was the appearance of numerous manufacturers' representatives, all of whom gave short talks on the products of their companies. S. M. L. McSpadden, Denver manager of the company, presided, while department heads also appeared on the program. H. J. Gundlach, general manager, made the closing talk. Among the manufacturers' representatives present were E. W. Hough, Dodge Sales and Engineering Company; W. R. Abbott of the American Steel & Wire Company; O. B. Austin, National Carbon Company; E. C. Magruder, Meadow Lark Washing Machine Company; K. L. Francis, Albert Sechrist Manufacturing Company; Earl Wessel, Hubbard & Company; and the following from the Westinghouse Electric & Manufacturing Company: T. E. Fitzsimmons, G. B. McNair, M. E. Lanning, William Trudgian, L. J. Bridger, A. F. McCallum, W. H. Bullock, J. H. McCabe, and J. P. Sprunt, Jr.

The Hurley Machine Company, Chicago, Ill., has recently announced that their new cushion wringer roll will be standard equipment on all Thor Washers. These new wringer rolls are so pliable that they adapt themselves to different thicknesses of clothes and distribute the pressure more evenly, producing drier clothes and preventing the breaking of the buttons.

The Uehling Instrument Company, Patterson, N. J., has appointed the Mine & Smelter Supply Company, of El Paso, Tex., as its exclusive representatives for CO_2 recording equipment and other power plant recording instruments in the states of Arizona and New Mexico, and west Texas, as well as the Republic of Mexico, north of Mexico City.

The Manhattan Electrical Supply Company, Inc., of New York, has recently placed on the market a new special battery designed for operating the so-called dry battery for WD-11 type vacuum tubes. Heretofore it has been customary to operate each WD-11 tube on a single dry cell. Radio Sparkers are designed to operate each tube on a pair of special cells assembled in a container, thereby giving about three times the length of service of a single cell. In addition to the increased length of life obtainable from the use of Radio Sparkers, the additional convenience of this battery which eliminates the necessity of connecting single cells is important to owners of sets using these tubes.

R. P. Yersin, of Gallup, N. M., will open a radio and electrical store in that city in the near future. All types of radio apparatus will be handled by the new store.

When K. E. Van Kuran, president of the Electric Club of Los Angeles, says "Children, gather around," the "Kids" pour from all of the doors and windows of several houses. He seems to be quite well supplied with "Kids," too, for he acts as a semi-guardian to all of the youngsters at the Kiddie-Koop Home in Los Angeles and from the expression on the "Kids'" faces one would say that "K. E." makes a great "Kiddie-Dad." Miss Lomer of the home helped to distribute oranges among the "Kiddies."

Trade Outlook

San Francisco

The effects of the advertising of Californians, Inc., is already beginning to be felt in San Francisco. Many pieces of property are being purchased both for speculative and investment purposes. Nearly all classes of property and buildings have been the subject of sales during the past two weeks and in many cases sellers who purchased only a few months ago report that prices have been more than the purchase price of the property.

Favorable conditions both in business and finance have prevailed since the first of January and manufacturing and buying at wholesale have increased during the first of February. The market for lumber has expanded to some extent and a stimulated demand for all products has been made by all foreign countries. Inquiries concerning American goods, from Peru, Spain, Italy, Cuba, Brazil, New Zealand, and Australia, are numerous and trade excursions to South American ports are expected to bring about the establishment of new connections.

Retail buying has been fairly brisk with prices firm and in some instances tending to be higher than those quoted during last month.

Manufacturers of electric appliances are endeavoring to increase the use of electric heating in apartment houses and are having considerable success. Many architects have been won over to the idea.

Seattle

General business conditions have held up better than usual following the holiday season, and the expected seasonal lull has been less noticeable than in many previous years. This is due largely to the almost immediate revival of lumber manufacturing and logging after the holiday shutdown, which was more brief this year than usual.

Building activities continue extremely heavy, with a number of important projects announced during the past week. There is every indication that the spring months will see a tremendous construction program, and this is expected to include very heavy residence building. The building situation is featured by the number of new apartments planned at this time, and this is of particular interest to electrical contractors as practically all of the better class apartments are being equipped with electric ranges. High class buildings are expected to be electrically equipped throughout, real estate operators report, as prospective tenants demand these conveniences.

Demand for all classes of electrical devices and equipment has shown a falling off during January, and dealers are getting their stocks in shape and replenished in anticipation of a busy spring season, when home building revives, with its demand for fixtures.

Denver

With January the second high month for building permits during the preceding year, a condition primarily due to the unusually light winter weather, all types of construction business has fared so well that many contractors are as much as six months ahead. However, a severe cold spell made its appearance with February and consequently there is marked inactivity at this time. Building permits thus far this year are past the $1,500,000 mark.

The unprecedented building boom is again reflected in the 1922 report of the municipal board of water commissioners and the growth of the city, likewise, in the fact that 2,860 tap connections were made during the year, nearly three times as many as in the previous year which held the high mark at that time. About 60,000 customers are reported on the lines of the local central station and the new requirements developing every day for additional service is taxing the engineering department of the company.

Collections are slow and considerable difficulty is experienced in electrical lines, with slow payments by contractor-dealers.

Jobbers report a good volume of sales. Central stations are buying more. Appliances are moving slowly for February. Radio business is rather desultory. There is a marked demand for lighting fixtures and it is believed that interest could be created in better grades of luminaires with proper incentive and development.

Los Angeles

During the month of January, 1923, the city building department of Los Angeles issued 4,646 permits with an estimated valuation of $11,258,517, as compared with 3,416 permits with an estimated valuation of $7,975,168 for January, 1922. This represented an increase of approximately 40 per cent. During the year 1922 Los Angeles ranked third among the cities of the United States in building with a total of over $120,000,000, being led by only New York and Chicago.

Bank clearings for the last half of January amounted to $287,978,050.64, which compares with the same period of 1922 with $214,155,473.59, as an increase of about 33 per cent.

Many new developments are under way which necessitate the buying of large quantities of electrical supplies and apparatus and this is particularly true of the larger apparatus. The building program necessitates the purchase of large quantities of electric supplies, conduit and wiring devices which considerably swells the sales of local jobbers. The sale of appliances continues despite the fact that in former years this was considered rather a dull season. Radio sales continue and many of the local jobbers have practically disposed of their excess stock which was on hand at the time of the depression in the radio field, and all are genuinely optimistic regarding the future sale of this class of material.

It is estimated that there is a new electric lighting service connected every five minutes of each working day in the city of Los Angeles, for new residences, apartments and stores, which are being installed at the rate of 2,300 a month. During the last six months of 1922 there were over 1,300 new power services placed in operation in as many industrial plants while there are applications for over 5,000 for new factories or those under construction.

Salt Lake City

Salt Lake City, and the entire intermountain section, are feeling more and more the increased industrial development which is rapidly returning to normal. One of the most important factors in this situation is the recovery of the copper industry. The Utah Copper Company is rapidly increasing its production of copper as the market grows stronger, and is employing nearly as many men as during its extensive operations four years ago.

The banks of Salt Lake City are reported in better condition than for some time, and able to take care of the demands of expanding business.

The sum of $5,000,000 in construction work and development is to be spent within the next few months in Utah in the construction of steel plants, by-product coke ovens, the development of coal and iron mines and railroad connections. This is in addition to the large sums which will be spent in subsidiary industrials that will necessarily be potent factors in the new steel industry.

Better business in both wholesale and retail branches are reported generally. Since the Christmas activity, however, sales of electrical appliances have not been very heavy. This, however, is the usual seasonal quietness, and improvement is expected with the advent of spring.

Portland

Building permits in Portland for January, 1923, were 20 per cent ahead of January, 1922, with actual building continuing at a good pace. Real estate dealers report unusual activity in lot sales. The demand for lumber is increasing rapidly and for the last few weeks has exceeded production by 25 to 50 per cent. Mills are speeding up and adding shifts with everyone expecting a good business year.

Electrical jobbers report business active for this time of year. The principal inquiries are coming from lumber mills and railroads. The latter will spend large sums on betterments as soon as the good weather arrives. Cooking appliances are moving slowly since the holidays but campaigns are afoot to help sales, especially in ranges and water heaters. The Portland Railway, Light & Power Company, which now has 2,000 ranges on its lines, expects to add 1,000 ranges this year.

Portland's bank clearings for January showed a gain of 24 per cent over the same month last year.

The weather continues favorable to construction.

Construction News

Bridges

B. C., Vancouver—The British Columbia Government has let contracts for two bridges over the Kootenay River to William Greenlees, of Vancouver. One bridge, which will cross the river at Waldo, is to have special foundations, and will cost $39,000; the other bridge will be built near Waspa, and will cost $19,000. Work is to be started as soon as possible on both bridges, and is to be completed before the end of the year. Mr. Greenlees submitted the lowest tender for each bridge.

Ore., Waterville—A 60-ft. bridge span is to be built over the tail race of the municipal power plant at Waterville, according to Commissioner Nels Roney. He announces that much highway work is needed and appropriations have been made for the improvement of 22 miles from Crow to the north county line; $176,000 has been set aside for this purpose.

Wash., Spokane—A concrete bridge is to be built across the Spokane River at Trent costing $60,370. W. J. Doust is to begin work at once and get the piers in before the high water next spring. The bridge is to be 422 ft.—center span being 150 ft. and two 80-ft. spans in addition to the approaches.

Wash., Seattle—Among the work planned for 1923 is the erection by the city of a reinforced concrete viaduct, costing $75,000, from First Avenue to Railroad on University Street. Plans are under way in City Engineer J. D. Blackwell's office.

Wash., Seattle—D. H. Evans, county bridge engineer, recommends to the county commissioners the construction of a bridge from Jernott to Enati, connecting Mercer Island in Lake Washington with the mainland, at a cost of $40,000. Proposed bridge will have a horizontal clearance of 80 ft. and a vertical clearance of 30 ft.

Wash., Montesano—Grays Harbor county commissioners recently let contract for new steel bridge over Humptulips River to the Union Bridge Company, Seattle, on their bid of $39,765. Structure will be 200-ft. steel span, resting on concrete piers.

Wash., Kelso—The Rainier-Long-Bell site for a bridge over the Columbia River is proposed. A cantilever bridge at this site is estimated to cost $1,630,500, with operation at $9,000 and maintenance at $7,000 annually; a suspension bridge would cost $2,035,000, with operation of $9,000 and maintenance of $6,000.

Wash., Seattle—West Seattle citizens have presented resolutions to the city council demanding that a permanent overhead structure be provided for the separation of grades of foot, vehicular, street railway and railroad traffic on Spokane Street, from West Spokane Street drawbridge to 30th Avenue S.W. and Admiral Way. The resolutions asked that a proposed bond issue to cover cost of bridge be submitted to the voters at the May election.

Dams

Calif., Los Angeles—Permit for the construction of a dam and a hydroelectric plant to cost $40,000,000 at the mouth of Diamond Creek on the Colorado River, has been granted by the state water commissioner of Arizona to James B. Girand, Phoenix engineer. Diamond Creek is about 100 miles above Boulder Canyon, where the federal government plans to build a great dam primarily for irrigation. The Diamond Creek dam would produce about 200,000 hp. electric energy. Mr. Girand has also filed an assignment of his rights to the Colorado River Engineering & Development Company, an Arizona corporation formed to carry out the project. Application will be made at once to the Federal Power Commission for a permit. Until this is secured, the project cannot go ahead. The proposed dam will be 300 ft. high. Bedrock was found 35 to 40 ft. below the stream bed. Water will be diverted through tunnels bored in solid rock which forms a point at the junction of Diamond Creek and the Colorado River, flowing into the creek and running back into the river.

Calif., Corcoran—All parties interested in the Tulare Lake district are working for the purpose of developing their properties. The objective of this project is the construction of a large reservoir at Pine Flat on the Kings River, about 5 miles above Peidra. A concrete dam will be erected 320 ft. high. As soon as present plans are under way, the flood waters of the Kings River will be impounded in the foothills and the surplus which reaches Tulare Lake from other sources will be controlled by means of huge canals in the lake bottom. It is proposed to finance the cost of this work on a bond issue. A petition for formation of this Tulare Lake Water Storage District is being circulated under L. B. Dapron, mayor of this city.

Calif., Oakdale—The election to vote bonds for the construction of the Melones dam and reservoir will be called within the next five months. The directors of the Oakdale and South San Joaquin district met at Manteca and ratified a resolution approving the plans prepared by Engineer A. J. Wiley and will forward them to the California state bond certification commission. One proposition will call for bonds to build Melones reservoir. A second proposition will provide for bonds for enlarging the canals of the Oakdale district to carry the additional water. As soon as the bond commission approves the project the districts can call the bond election.

Wash., Walla Walla—The Burbank district has received federal approval to build a temporary dam across the Snake River, the cost of which is estimated to be about $42,000.

Wash., Clarkston—Plans are being made for the proposed Dry Gulch dam near Clarkston. The estimates range from $550,000 to $1,000,000. It is hoped that this session of Congress will give help to this project.

Wash., Everett—Bids will be called shortly by city commissioners for excavation for the 20,000,000-gal. reservoir proposed by the city. The work will involve 235,000 cu. yd. and will cost between $75,000 and $100,000.

Ore., Klamath Falls—Plans for the expenditure of the $700,000 allowed as an appropriation for work on the Klamath project for 1923 are set forth in the estimate made for the construction of a storage dam for the Horsefly reservoir. This will cost about $275,000. It will have a capacity of 90,000 acre-feet and will furnish a stored water supply for 14,000 acres of agricultural land in the Langell Valley. It is estimated that approximately 25,000 acres can be reclaimed from the Tule Lake. This land will be available for soldier settlement. In the Langell Valley division $20,000 is requested to complete the lateral system on Clear Lake, part of that division which is now under construction; $4,000 is requested for quarters for employees, and $10,000 for the construction of telephone lines. On the main division $5,000 is requested for replacing the Lost River flume and $10,000 for replacing the Poe Valley flume. For miscellaneous lateral extensions to provide irrigation service for lands which have been forced into the Klamath Irrigation District, $5,000 is estimated. Lateral extension in the Tule Lake district will cost about $100,000.

Highways

Calif., Los Angeles—Geo. H. Oswald, 336 East 58th St., Los Angeles, was awarded contract at $143,055 for grading and paving with asphalt-concrete 9.36 miles of state highway in Imperial County, between new county well and old county well at plank road.

Calif., Pasadena—City Manager C. W. Koiner has started a movement to secure two additional roads leading into the Arroyo Seco, at the site of the new stadium. The roads will be 100 ft. wide and lead from Linda Vista Ave. to the upper and lower ends of the stadium.

Calif., San Francisco—District Engineer, Bureau of Public Roads, 881 Mills Building, San Francisco, will receive bids for constructing federal roads, as follows: Feb. 27—Mineral projects, Tehama County, Calif., Red Bluff-Susanville, about 40 miles east of Red Bluff, final plans ready Feb. 1; project 10 to 12 miles long, about 150 cu. yd. excavation, 1 steel truss bridge, 70-ft. span; total cost $175,000; April 15—Current Creek, Nye County, Nevada, on Ely-Tonopah Road, 40 miles southwest of Ely; length, 18 miles; May 1—Austin-East, Langer County, Nev., on Austin-Eureka Road, about 12 miles east of Austin; length 18 miles, about 80,000 yd. excavation; May 15—Meadow Creek, Elko County, Nev., a portion of the Gold Creek-Jarbridge project, 72 miles north of Elko, about 18 miles, consisting of grading and drainage structures, 90,000 cu. yd.

Mexico, Mexicali—Gov. Jose Inocente Lugo has announced that $400,000 would be spent in 1923 for paving, constructing walks, and other improvements in northern Lower California, principally in Mexicali. A large part of the improvement funds for this district are being raised by bond issue.

Ore., Wallowa—The tentative road program for 1923 of the forest service for Wallowa County calls for 58 miles of construction at a cost of $83,000. The forest service proposed to spend $26,000 on this portion of the Pomeroy-Wallowa Interstate Road.

Ore., Astoria—Three important highway improvement projects are to be undertaken by the Clatsop County Court during the coming spring, and bids on them will be opened in February. Those projects are: The paving of five miles on the main Nehalem highway, an appropriation of $100,000 having been made for that purpose; and the paving of about 2½ miles on the Young's River falls highway. The county will this year construct three new bridges in addition to the Lewis and Clark bridge, which is to be built under the supervision of the state highway commission.

Wash., Spokane—Spokane County Commissioners have awarded to the Independent Asphalt Paving Company, Seattle, contract for paving 8.7 miles of the 20-ft. Trent Highway, on their bid of $210,094. Contract calls for 7-in. concrete paving. The commissioners have announced the county's road-building program, calling for the expenditure of $750,000. Plans have also been completed for the road-building program in 1924, which calls for expenditure of $850,000 and construction of 100 miles of highway. Plans provide for construction costs of $8,500 to $10,000 a mile, for macadam finish 16 ft. wide and 8 in. thick, with crushed rock base. More than 43 miles of the highways to be built in 1924 have been surveyed.

Wash., Seattle—Among the highway projects planned for early beginning by the King county commissioners, according to County Engineer T. R. Beeman, will be the Salburg Road, costing $60,000; the Stevens Highway, costing $50,000; Issaquah Road to Hobart, costing $20,000.

Wash., Spokane—Plans for extension of the Northwest Boulevard arterial highway from Kiernan Avenue to connect with the Nine Mile Road, have been completed by A. D. Butler, city engineer. Work will cost $50,000.

Irrigation Projects

Ariz., Phoenix—Shareholders of the Salt River Valley Water Users' Assn. have approved a bond issue of $1,800,000 for the construction of the Mormon Flat development project. Work has already started. The proposed work involves the preparation of the spillway of the Roosevelt dam for 19 gates to raise the height of the dam 15 ft., the installation of a 7,000-hp. generating unit in the Roosevelt power plant and the construction of a dam at Mormon Flat, 27 miles below the big dam. F. A. Reid is president of the association. The issue carried by a vote of 14 to 1.

Calif., Oroville—The board of directors of the Thermalito Irrigation District recently decided on an election to be held Feb. 23, for the purpose of voting on a bond issue of $270,000. The proceeds will be used for construction work in the irrigation district.

Ore., Bend—A contract between the Powell Butte irrigation and the North Canal Company to build a central Oregon canal has been signed. An irrigation system sufficient to water 13,000 acres of land at a cost to the district of $838,750 is to be constructed. The district agrees to pay $63.75 per acre for the completed system. This gives them an interest in the north canal, in the north canal dam, in the central Oregon canal and in the Crane Prairie reservoir.

Wash., Olympia—Marvin Chase, state supervisor of hydraulics, has approved plans of Burbank Irrigation District No. 4 for a wing dam in the Snake River above Five-Mile Rapids, to divert water into the district canal for irrigation purposes.

Wash., Yakima—L. C. Holt, supervising engineer for the Indian Reclamation Service, is preparing plans for the expenditure of $125,000 on the Satus irrigation project for the present year.

Wash., Yakima—A bill appropriating $1,300,000 for reclamation work in the Yakima Valley has passed both houses of Congress. The money will be spent chiefly on the Rim Rock dam, where about 500 men are now employed. This dam will save about 140,000 acre-feet of water each year, and with the normal flow of the Yakima River, will make available an additional 140,000 acres of arable land.

Wash., Okanogan—Early development of the Whitestone irrigation project in north central Washington, near the Canadian boundary, is promised. The state, through the department of conservation and development, has arranged to purchase $700,000 of the bonds of the Reclamation District, thus providing funds for the work. The Whitestone project contains about 8,500 acres of land, and adjoins the West Okanogan district, and will cost approximately $750,000 to completely develop.

Power Projects

Calif., Banning—San Gorgonia Power Company has been granted permission by railroad commission to construct two hydroelectric plants near Banning. Permission was also granted the company to sell $400,000 of bonds and $100,500 of common stock. The $100,500 stock shall be used to pay for properties transferred to company. The San Gorgonia Company was given permit to lease its properties, when completed, to Southern Sierras Power Company. Construction will be in charge of C. O. Poole, chief engineer of the Southern Sierras Company.

Calif., Pasadena—Planning for the future expansion of the municipal lighting department, Manager C. W. Koiner states it is planned to erect cooling towers, outdoor high line construction and a step-up substation on property adjoining the plant on Glenarm Street which will give the city the entire frontage in the block to South Fair Oaks Avenue. The land the city seeks is owned by the Pacific Electric Co. and the Union Pacific Railway, and proceedings have been instituted for the acquirement of this property.

Calif., Crescent City—The Smith River Light & Power Co. has been organized, with C. Romander as general manager, for the erection of a power plant on Smith River. It will consist of dynamos driven by Diesel engines. The company has taken over the local water works and will make extensive improvements, including a new reservoir. Henry Westbrook, Sr., is vice-president, Geo. D. Wood is secretary and treasurer of the company.

New Mex., Farmington — Construction of a high tension line from Durango, Colo., to this place has been announced by the Western Colorado Power Company, which will include the San Juan basin, where operations resulting from the development of railroad and coal properties by Los Angeles capital has started an industrial boom.

Wash., Wenatchee—The Washington Water Power Company plans to extend its transmission line to Lake Chelan to provide electric light and power to the Manson district, on the north side of the lake. Franchise has been granted by Chelan County.

Wash., Spokane — The Washington Water Power Company plans the building of a 60,000-volt line from Pullman to Moscow, a distance of 11 miles, as an extension to the new power line from Lind to Pullman. The line will replace the present 22,500-volt line supplying power to Pullman from Moscow.

Wash., Vancouver—The Clarke County Light & Power Company has been formed for the purpose of establishing a power plant to supply the Battle Ground district with light and power. Application for franchise is now before state officials.

Wash., Seattle—The Westinghouse Electric & Manufacturing Co., on its bids of $49,307 and $24,934 for items 1 and 2 respectively, received the contracts for furnishing insulators and hardware for the Skagit River development project. Plans have been approved by the board of public works for electrical equipment for the North substation, to be installed in connection with the Skagit River power development, and call for bids for furnishing this equipment will be made shortly.

Wash., Tacoma—The Puget Sound Power & Light Company was recently granted a 25-year franchise to construct and operate transmission lines in a large district in Pierce County. Service will be given in Puyallup, and on the Schoenboekler, Mott, Sumner-Edgewood, Parker, Ackerman Roads, and on the Pacific Highway in section 14.

Wash., Hoquiam—The Grays Harbor Railway & Light Company recently completed and put in operation its new transmission lines to Montesano. The company recently entered into a contract to sell power to the east end of the Grays Harbor County.

Power Plant Equipment

Calif., Long Beach—William P. Graef, district manager of the Southern California Edison Company, announced that a transformer plant will be built at the intersection of alleys between Pine and Locust Streets and Ocean Blvd. and First Street. Cost, $250,000.

Calif., Hanford—The Southern California Edison Company will spend $60,000 the coming year in erection of a substation here, also a store house and garage and in improving the distribution system. E. S. Hamilton is district manager with headquarters here. The sum of $78,000 will be used in improving the service outside of Hanford.

New Mex., Lovington—A movement has been started by city officials looking toward the rebuilding of the local light plant, which has been out of operation for nearly a year.

Wash., Everett—The Puget Sound International Light & Power Company recently placed in operation its $30,000 substation at Martha Lake. The new station will furnish light and power to factories and homes along right-of-way of the Everett-Seattle interurban between Martha Lake and Beverly Park.

Wash., Wenatchee—The White River power house is to be enlarged by the Stone-Webster Company, including the installation of new machinery. The addition will furnish power to Wenatchee.

Railways

Calif., Arcadia—Omer Huffman, Arcadia, has the contract to erect a hollow tile station building at First Ave. and St. Joseph St., for Pacific Electric Railway. It will have inside and outside waiting rooms for men and women, and two lavatories. Hollow tile walls, stucco exterior, red tile roof.

Calif., Los Angeles—The Pacific Electric Railway Company has purchased the Olive Street school property on Olive Street between 4th and 5th Sts., preparatory to constructing a subway from the Hill St. station to Glendale Blvd. and First St. It is stated that work will commence this spring. The subway will cost about $3,000,000.

Calif., Los Angeles—According to I. L. Hibbard, general manager, Coast lines A. T. & S. F. Railway, the Santa Fe will double track a large portion of the coast line during 1923. The amount planned for this year is 137.5 miles, which will cost about $8,000,000. It is planned to double track all coast lines as far east as Albuquerque, N. M., the eastern terminus of the coast division.

Calif., Los Angeles—The Union Pacific Railway Company will erect a terminal on the company's main line between the Jaboneria Road and the Telegraph Road, south of 9th St. The first unit will contain an engine house, locomotive shops, freight car shops, etc. T. C. Peek, general passenger agent. Cost, $1,750,000.

Calif., Los Angeles—Work will start on the $5,000,000 Hill St.-Glendale Blvd. Tunnel to be built by Pacific Electric Railway Company early in the spring, according to Frank Karr, second vice-president. Tunnel will start from Olive Street and run on to Maryland Street, from there to Flower Street and from there northwest, connecting at First Street with present Glendale Blvd. line.

Calif., Los Angeles—The Union Pacific Railroad Company will erect a roundhouse, supply depots and small machine shops on 60-acre tract between Citrus and Mill Sts., Colton. Cost will be over $1,000,000.

Mont., Livingston—A new $150,000 boiler shop is to be built during 1923 for the Northern Pacific Railroad, as announced by P. M. Rapelje, vice-president in charge of operations; 5,280 freight cars and 49 locomotives have also been ordered for use of the northwestern shippers.

Wash., Spokane — Among the improvements planned by the Great Northern Railway is completion of a block signal system between Spokane and Wenatchee, at a cost of more than $400,000, according to C. O. Jenks, vice-president, who states that oil-burning locomitives will be installed on western divisions, and that orders for 1,500 box cars have been placed. Three million dollars for automatic block protection, double tracking, etc., will be spent by the company in Washington and the Rocky Mountain district.

Wash., Longview—Twelve bids received by the Longview, Portland & Northern Railway Company, owned by the Long-Bell Lumber Company, for the construction of the first unit of 8½ miles of a contemplated 30-mile railway, have

been held up due to the Kelso bridge disaster. The work involves 153,580 cu. yd. of excavation, 39,300 cu. yd. of loose rock, and 59,300 cu. yd. of solid rock excavation.

Wash., Bellingham—The Puget Sound Power & Light Company announces through Manager H. B. Sewall, that it will expend $60,000 in rebuilding certain tracks and repaving between them, during the year. The Pacific Northwest Traction Company, of which H. B. Sewall is also manager, will expend approximately $150,000 in rebuilding the four and one-half mile waterfront trestle, used by the company's interurban. Three million feet of lumber and 20,000 ties will be needed for the improvement.

Street Lighting

Calif., Los Angeles — Proceedings are under way for the construction of an ornamental lighting system for Hollywood Blvd., between Vine Street to Sanborn Junction. The standards are to be of cast iron, Grecian pattern, with two form 18 Novalux lantern lighting units, with 600-cp. lamps. The lanterns will be of alabaster rippled glass. The lights were designed by the General Electric Company. The municipal art commission has approved the design.

Calif., Los Angeles—City council has adopted ordinances ordering construction of ornamental lighting system, complete, in Palos Verdes St., between Sixth and 14th Sts., San Pedro; also in Belle Porte Ave., between Weston St. and 55th St. Plans and specifications on file with city electrician, second floor, south city hall annex.

Calif., Redlands—City trustees are discussing purchasing wholesale current necessary to light city streets. A change in the system will be made from multiple to series system, necessitating an expenditure of about $10,000 by the Southern California Edison Company. Ornamental lights are to replace the old gooseneck type now in use. The first streets to be improved by the use of ornamental lights are Cajon and Highland Ave. George S. Hinckley, city engineer.

Calif., Culver City—Plans are being considered for an elaborate ornamental lighting system to be installed along Washington Boulevard, throughout Culver City.

Calif., Pasadena—W. A. McNally Company was awarded the contract at $11,536 for constructing lighting systems on Madison Ave. from Colorado to Fillmore Sts. and at $2,675 for similar work on E. Colorado St., from Marengo to Los Robles Ave.

Calif., Los Angeles — Newbery Electric Company, 724 So. Olive St., has submitted low bid to board of public works, at $14,478 for constructing ornamental lighting system in No. Main St., between Eastlake Ave. and Daly St.

Colo., Lamar—Although the project has not been completely financed, plans are being pushed for an ornamental street lighting system, preliminary contracts for the cable and regulators already having been let by the city council. J. E. Todd, municipal superintendent, advises that bids for the 80 standards, tops, and other necessary equipment will be received shortly.

Wash., Olympia—Material is on the ground for Olympia's boulevard lighting system, and erection of the poles and completion of the system will be rushed. Removal of overhead wires in the downtown district by the Western Union and Pacific Telephone companies is under way.

Streets and Sewers

Calif., Huntington Beach—City trustees have passed a resolution of intention calling for a $300,000 bond election for paving of Ocean Ave., from First to 23rd Sts. The remainder of the money will be used for the installation of lights, culverts, drainage, and grading. Date of election will be set later.

Calif., Santa Ana—The Water Works Supply Company here was awarded contract for the furnishing of equipment for the treatment plant for the joint outfall sewer system being built by Santa Ana, Orange, Anaheim and Fullerton. Price, $39,897. City engineers have been instructed to prepare plans for the building which will house equipment.

Calif., Pasadena—The Alhambra Feed & Fuel Company was awarded the contract for the excavation of the sewage disposal plant to be built on the city farm. Price, $0.52½ per cu. yd. The Smith-Booth-Usher Company was awarded the contract for the purchase of 3 Connersville blowers, $2,910 for 50-hp. and $4,219 for 100 hp. They will furnish a Westinghouse motor-generator exciter. Price, $1,105. Walter Hassendahl was awarded the contract for furnishing the De Laval pumping units, prices being $680 and $1,743. Work will start soon.

Calif., Orange—It has been definitely determined that Orange will run its main line sewer (portion of the inter-city outfall system) from Orange to join the main line of the Anaheim sewer to the treatment plant at the point where the Pacific Electric Railway tracks cross the Garden Grove road east of Garden Grove. The line is estimated to cost $55,000.

Calif., Lodi—The $100,000 bonds for a sewage disposal plant carried. The plant will be built on the tract of land belonging to the city of Lodi on the banks of the Stockton-Mokelumne canal and will be of the activated sludge system.

Calif., San Francisco — The board of public works has awarded contract for the Army Street sewer to the Clinton Construction Company, on a bid of $145,609.

Calif., Los Angeles—Bids were reopened recently by the board of public works for the removal of 700,000 cu. yd. of sand from the site of the proposed sewage-screening plant at Hyperion. Five bids were submitted, that of John Balch being the lowest. His figure for the work was $97,704, which is approximately $22,000 less than his first bid. It is lower by about $35,000 than the figure set by the city engineer. All other bids received showed material reductions as compared to estimates received when bids for the work were first opened on Jan. 29, last. The screening plant is to be the first of the improvements under the $12,000,000 sewer bond issue recently voted.

Colo., Denver—Actual work on the construction of the $1,000,000 Park Hill storm sewer, the largest sewer ever constructed in the city, will be started in the spring, Walter B. Lowry, manager of improvements and parks, stated recently, following a tour by city officials of the district to be drained by the sewer. The drainage area to be covered by the sewer will comprise nine square miles, the assessable area being 54,200 lots. This drainage area has been definitely mapped out. The maximum sewer will be 11½ ft. in diameter. The original estimated cost of the sewer is $1,250,000, but this estimated cost only applies to the main and submains. When the lateral sewers are built, the total cost of construction will be close to $2,000,000. Bids for construction of the sewer, it is predicted, will be opened between Apr. 15 and May 1, actual construction work beginning a short time later. Chas. A. Davis is designing engineer of the sewer system.

Wash., Seattle—Contract for paving and installation of water mains on North 77th Street has been awarded to Fiorito Bros., on their bid of $39,249. Eleven other bids were submitted, all closely competitive.

Wash., Hoquiam—Creation of several large sewer districts is planned for this city during the present year, in connection with proposed new paving work.

Wash., Seattle—The board of public works has awarded contract for the paving of Alki Ave. from the ferry landing along the waterfront between Luna Park and the municipal bathing beach, to Swensson Construction Company on a bid of $111,752.

Wash., Aberdeen—The city recently awarded to the Central Foundry Company of San Francisco and New York, contract for furnishing pipe for an auxiliary water main into the residence section. Bid totaled $44,000.

Waterworks

Calif., Fresno—Improvements to the Fresno City Water Company system, involving an expenditure of $350,000, have been authorized by the board of directors of the San Joaquin Light & Power Company as a part of a $4,500,000 budget passed at the annual meeting of the directorate held in Los Angeles, according to General Manager A. G. Wishon.

Calif., Chico—Decision to call a special bond election to purchase the water system of Chico or provide a municipal water system was reached at a recent meeting of the trustees. The election is to be held on March 3 to vote on a bond issue of $475,000.

Calif., Santa Barbara—An $850,000 bond issue for the installation of a water distributing system and a water tunnel will be voted on Feb. 27, in the Montecito Valley.

Calif., Ventura—The board of trustees is planning to call a bond election soon for securing a water system here.

Calif., Banning—The City Water Company of Banning is planning to spend over $35,000 in improvements to the water system of Banning. The water plant will be rebuilt, water mains enlarged, and 50 fire plugs installed.

Calif., Los Angeles — $100,000 Angeles Mesa district bonds for the purchase of the present system and installation of new water mains carried, 410 for and 155 against.

Colo., Englewood—A $250,000 bond issue for the construction of a municipal water works for Englewood was overwhelmingly defeated in a special election held recently.

Utah, Kamas—The people of Marion, four miles north of this place, are making preparations to begin work on their proposed waterworks system. Estimates are now being received as to the cost of the project. A reservoir will be built and a fall of 200 ft. will be obtained. A large pipe will be used for part of the main line, then reductions to three-inch, two and one-half inch and finally to two-inch will be made. The system will cost between $12,000 and $15,000.

Wash., Longview — The Long-Bell Lumber Company, which is building the town of Longview, has applied to the state supervisor of hydraulics for permit to divert the water of two streams to furnish domestic and industrial water supply for the town. The company proposes the expenditure of about $700,000 in constructing two diversion dams and necessary pipe lines.

Miscellaneous

Ore., Portland—The Public Dock Commission is negotiating for the purchase of a tract of land adjoining Terminal No. 1. Tentative plans provide for the construction of a wharf covering the entire area, together with the necessary sheds, trackage and new slip. This will assist in handling the rapidly growing commerce of the port.

Wash., Seattle—Piers—The Pacific Steamship Company, operating the Admiral Line, plans the construction in Seattle of a great ocean shipping terminal costing $3,000,000, including three huge piers, 1,100 ft. in length, warehouses of large capacity and an office building. The company is negotiating for a 20-acre tract of land estimated to cost $600,000.